

# ED50

Low Energy Automatic Swing Door Operator  
Installation in Surface Applied Header

## Installation Instructions

DL4614-020 – 08-2018

| EN |

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# 1 General information

## 1.1 Installation Instructions

This manual provides installation instructions for ED50 automatic swing door operators used in single door and pair door installations.

## 1.2 Manual storage

This document must be kept in a secure place, and accessible for reference as required.

If the door system should be transferred to another facility, insure that this document is transferred as well.

## 1.3 dormakaba.com website

Manuals are available for review, download, and printing on the [dormakaba.com/us](http://dormakaba.com/us) website.

## 1.4 Symbols used in these instructions



### WARNING

This symbol warns of hazards which could result in personal injury or threat to health.

---

### NOTICE

Draws attention to important information presented in this document.

---

### CAUTION

This symbol warns of a potentially unsafe procedure or situation.

---



### TIPS AND RECOMMENDATIONS

Clarifies instructions or other information presented in this document.

---

## 1.5 Dimensions

Unless otherwise specified, all dimensions are given in inches (").

## 1.6 Building codes and standards

ED50 installation: observe applicable national and local building codes.

## 2 Product description

### 2.1 Intended use.

The ED50 is a low energy electromechanical operator used exclusively for opening and closing interior or exterior swing doors.

The ED50 operator is installed in a surface mount header at customer site. The header must be installed on an interior building surface.

For double swing doors, both operators are installed in a single header.

### 2.2 Low energy operator.

ED50 is supplied only as a low energy operator. The operator is supplied with a reduced power motor and a brake. The brake is used during door hold open time.



#### WARNING

To reduce risk of injury to persons, use this ED50 operator only with an automatic swing door for which the ED50 is designed for. Reference Chapter 7, Technical data.

### 2.3 Arm configurations.

ED50 is suitable for installation using:

- ED push arm
- ED pull arm with track



#### TIPS AND RECOMMENDATIONS

Insure operator door configuration is qualified for use on the respective smoke or fire rated door.

### 2.5 ED50 maximum door weight.

220 pounds [160 kilograms] at a maximum door width of 48".

### 2.6 Hardware as shipped.

#### 2.6.1 Single swing door

1. Box containing surface mount header assembly for one ED50 operator. Included inside header are the following:
  - Low energy accessory installation kit (Chapter 6).
  - Program switch panel (Chapter 5).
  - Box containing push arm or pull arm kit.
2. Box containing ED50 operator with attached mounting base.

#### 2.6.2 Double swing doors

1. Box containing surface mount header assembly for two ED50 operators. Included inside header:
  - Two low energy accessory installation kits (Chapter 6).
  - Program switch panel (Chapter 5).
  - Two boxes, each containing a push arm or pull arm kit.
  - ED50 operator connection cables (Para. 6.3).
2. Two boxes, each containing an ED50 operator with attached mounting base.

# 3 Safety information

## 3.1 Safety instructions

This document contains important instructions for installation of the ED50 swing door operators. Review these instructions thoroughly prior to installation, and follow them carefully during installation, commissioning, troubleshooting and maintenance.

## 3.2 Door signage requirements, reference Chapter 11

Proper signs and labels per ANSI/BHMA A156.19 Standard for power assist and low energy power operated doors shall be applied and maintained on the door controlled by the ED50 automatic swing door operator.

## 3.3 Safety warnings



### WARNING

Damage to equipment or incorrect equipment operation may result from an incorrect installation.



### WARNING

Hazard to mechanical processes by use of control settings, elements, or procedures not documented in this manual!



### WARNING

Electric shock hazard!  
By use of control elements, settings, or procedures not documented in this manual!



### WARNING

Work on electrical equipment and 115 VAC wiring installation must be performed only by qualified personnel!



### WARNING

Metallic doors must be grounded per national and local codes!



### WARNING

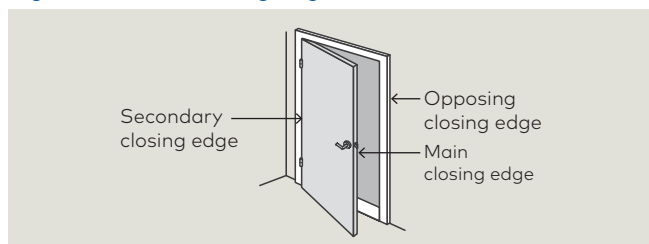
Hand pinch point and crushing hazards at door closing edges!



### WARNING

Crushing hazards at door closing edges!

Fig. 3.1 Door closing edges



## 3.4 Residual hazards



### WARNING

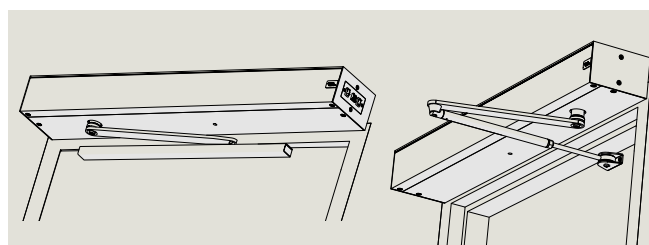
After installation, hazards such as minor crushing, impact with limited force, and risk to unsupervised children may exist depending on structural design of door area, type of door, and any safeguards that have been implemented.



### WARNING

Hand pinch point and crushing hazards at arm and track!

Fig. 3.2 Hazards at arm and track  
Pull arm and track      Push arm

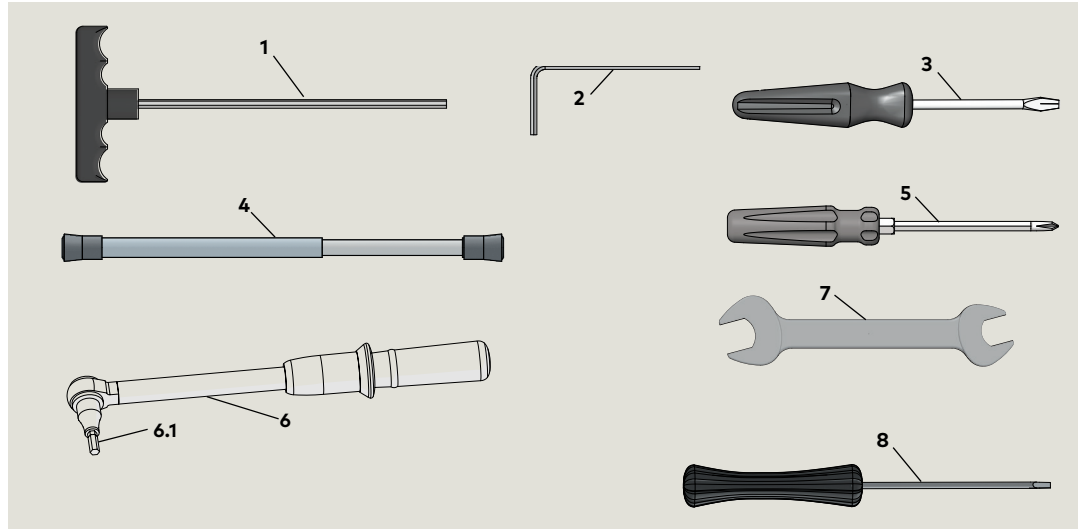


# 4 Recommended tools and torque chart

## 4.1 Recommended tools

Fig. 4.1.1 Recommended tools

- 1 T-handle hex key, 5 mm
- 2 Hex keys, 2.5 mm, 3 mm, 6 mm
- 3 Screwdriver, flat blade
- 4 Door pressure gauge, 0 to 35 ft - lbf
- 5 Screwdriver, Phillips, #2, #3
- 6 Torque wrench, 3 to 50 ft lb min.
- 6.1 Metric hex key sockets
- 7 Open end wrench, 13 mm
- 8 Screwdriver, flat blade, M2 (1/16 to 3/32")



## 4.2 Standard tightening torque

### 4.2.1 Standard tightening torque

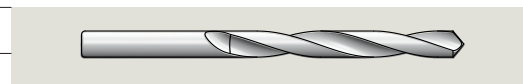
Fastener size	ft lb
M5	3.7
M6	7
M8	17
M10	34
M12	58

## 4.3 Drill bits

### 4.3.1 Drill bit sizes for fasteners

Fig. 4.3.1 Drill bit

Fastener	Drill bit size	
#10 wood screw	Hardwood 9/64"	Softwood 1/8"
#12 wood screw	Hardwood 5/32"	Softwood 9/64"
#14 wood screw	Hardwood 11/64"	Softwood 5/32"
1/4 -20 metal self tapping screw	7/32"	
10-24 barrel nut	5/32"	



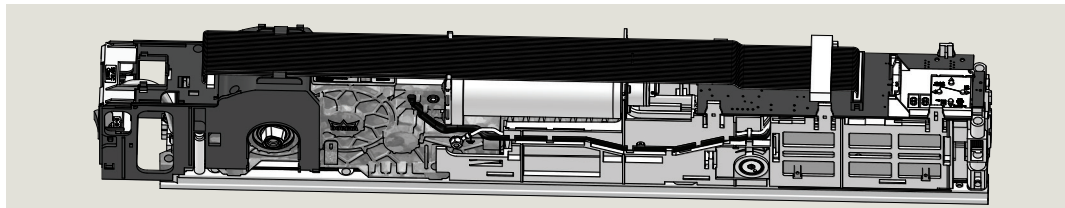
# 5 ED50 Product overview

## 5.1 ED50 operator

- 1 ED50 header
- 8 ED50 operator
- 9 Mounting plate
- 10 Push arm
- 11 Terminals for accessory wiring
- 12 Bag containing terminals and third guide pin\*

\* Included with operator

Fig. 5.1.1 ED50 operator



### TIPS AND RECOMMENDATIONS

Reference Para. 5.6 for operator detail.

Fig. 5.1.2 Accessory terminals, guide pin



## 5.2 ED50 program switch panel

- 1 Program switch panel DX4604 -01C, 3 ft. cable -02C, 10 ft. cable
- 2 Program switch, 3 position
- 3 Exit only switch, 2 position
- 4 Comm port for dormakaba handheld
- 5 RJ45 comm. cable DX4607

Fig. 5.2.1 Program switch panel

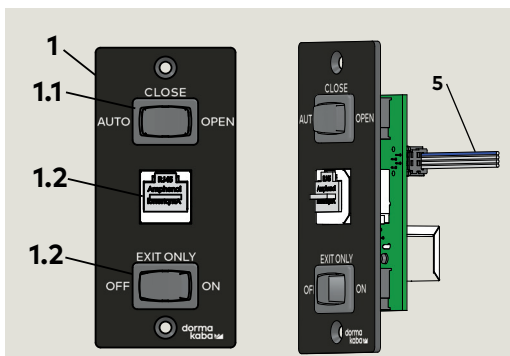
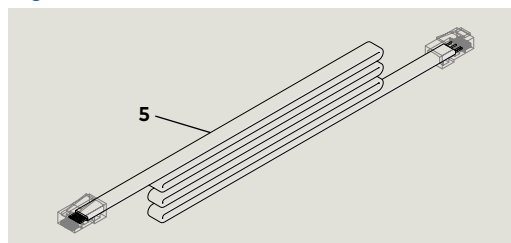


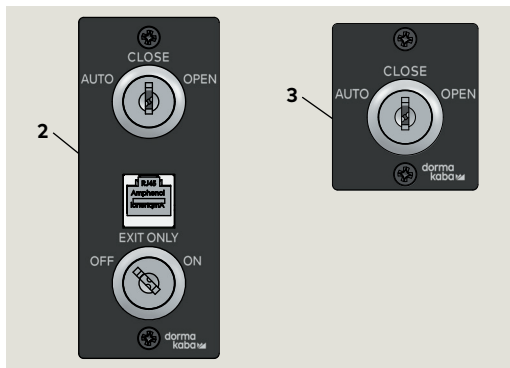
Fig. 5.2.2 RJ45 communication cable



## 5.3 Optional key switch panels

- 2 Key switch panel, RJ45, DX4604-21C
- 3 Key switch panel DX4604-11C

Fig. 5.3.1 Key switch panels



For wiring diagrams, reference Appendix A.



## 5.4 ED50 single swing door header

- 1 ED50
- 4" x 6" header
- 2 Header cover
- 3 Cover screws
- 4 Program switch panel mounting surface
- 5 Jamb bracket
- 6 4" x 6" header track
- 7 Hole for drive axle
- 8 ED50 operator
- 9 Hole for spring tension adjustment

Fig. 5.4.1 Header assembly with cover

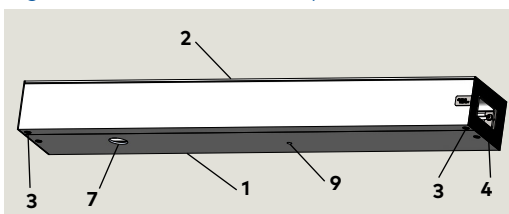


Fig. 5.4.2 Header without ED50 operator

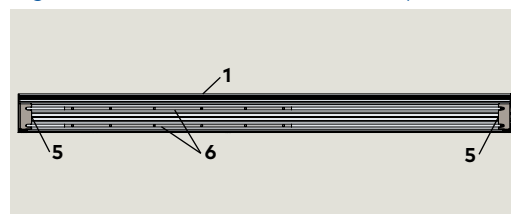
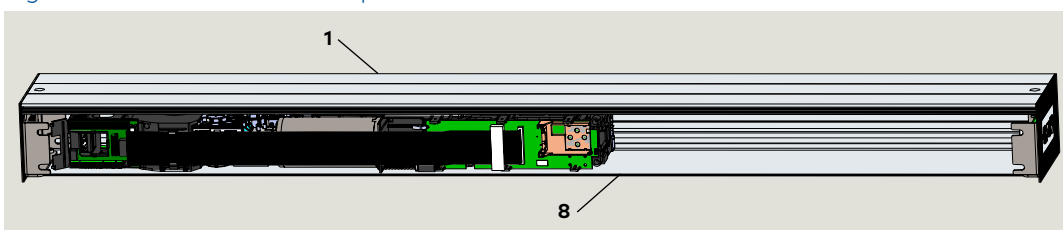


Fig. 5.4.3 Header with ED50 operator



## 5.5 ED50 double swing door header

- 1 Double header
- 2 Header cover
- 3 Cover screws
- 4 Program switch panel
- 5 Hole for drive axle
- 6 Header track
- 7 Hole for spring tension adjustment

Fig. 5.5.1 Double header with cover

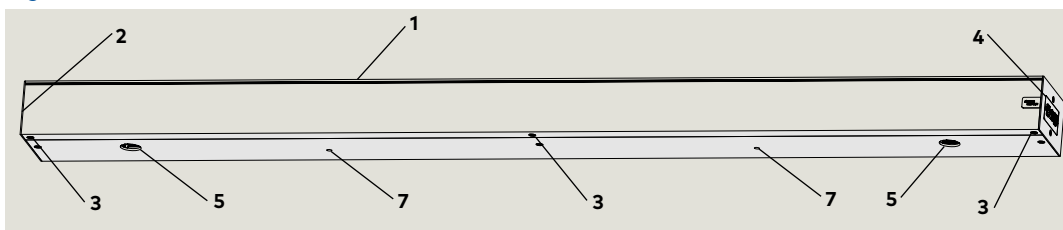


Fig. 5.5.2 Double header without ED50 operators

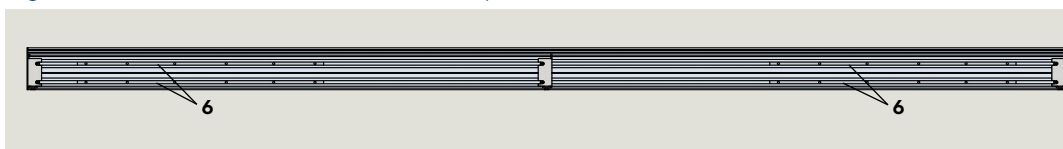
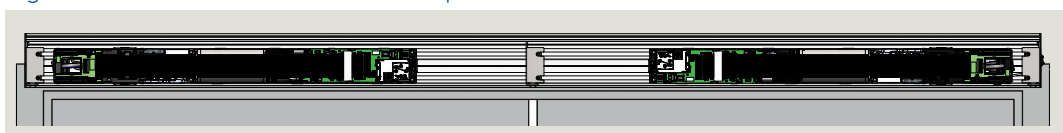


Fig. 5.4.3 Double header with ED50 operators



## 5.6 ED50 operator component views

Fig. 5.6.1 ED50 component view one

- 1 Power switch
- 2 120 Vac cable
- 3 Housing unit
- 4 Drive axle connection
- 5 Operator (motor, gear, spring)
- 6 Spring tension adjustment, closing force
- 8 4 button user interface
- 9 Information display
- 11 Potentiometer, closing speed adjustment
- 12 Terminal jumper socket, push or pull mounting
- 15 RJ45 socket, double door operator synchronization
- 16 Com 1 service connector
- 17 Accessories terminal board
- 18 Mounting plate
- 19 Customer ground terminal
- 20 Guide pin
- 21 Ribbon cable
- 22 Ribbon cable socket
- 23 Upgrade card socket
- 24 Motor
- 25 Encoder socket and cable
- 26 Motor socket and cable
- 27 Control board
- 28 Motor brake

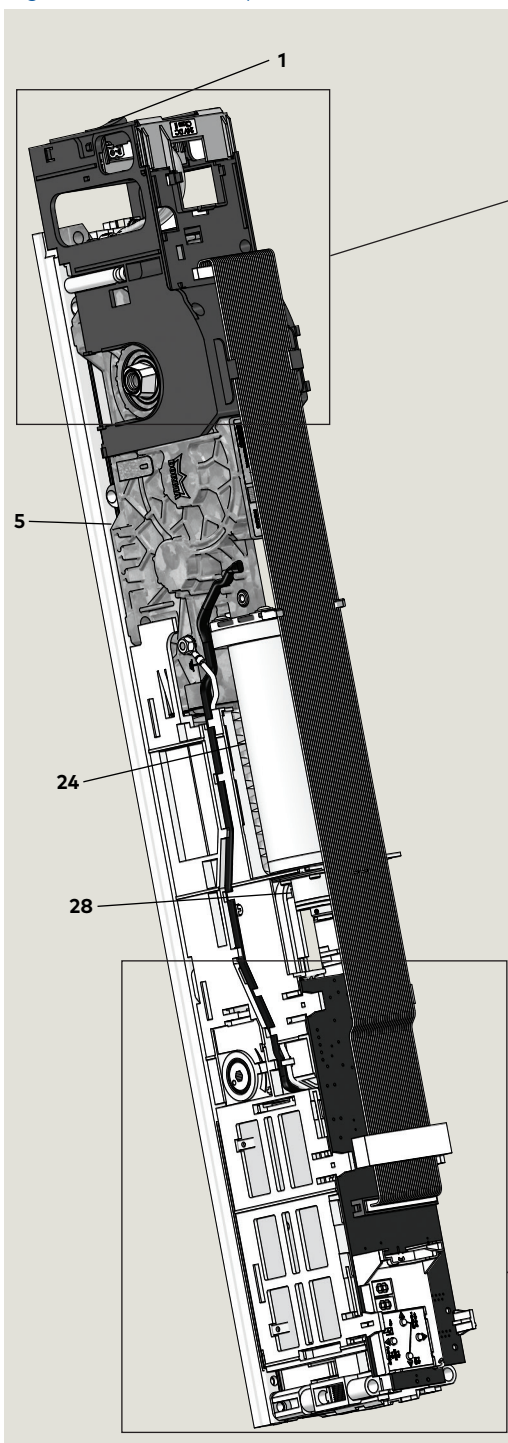


Fig. 5.6.2 ED50 terminal board detail

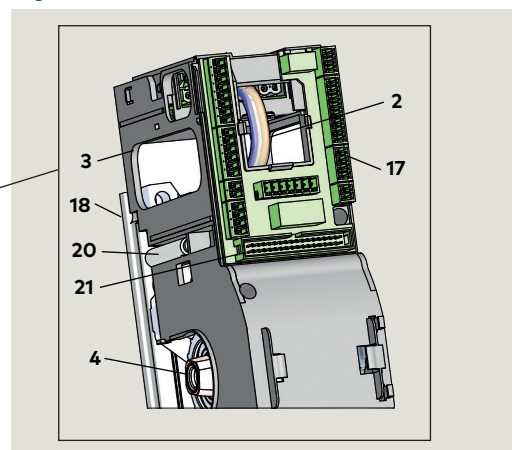


Fig. 5.6.3 ED50 control board detail

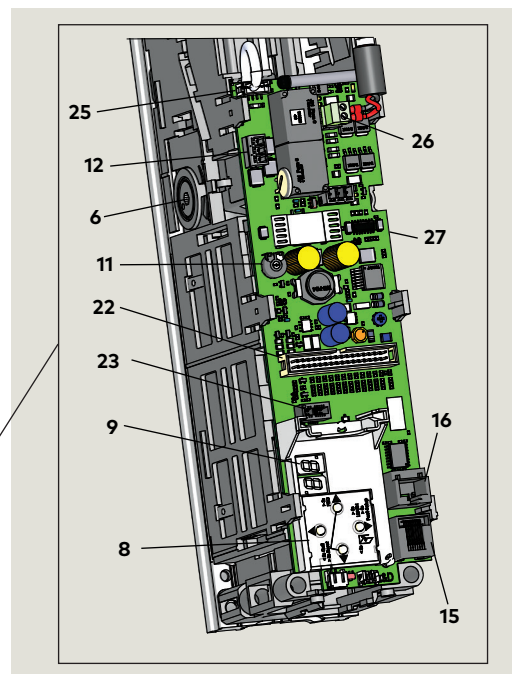
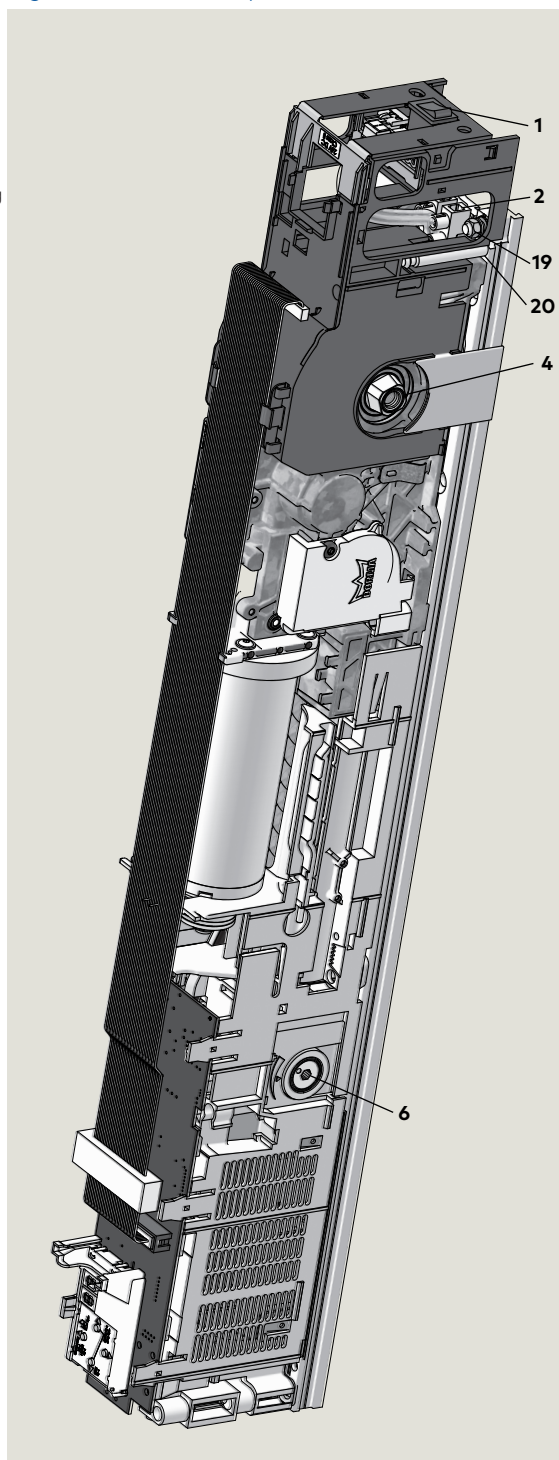


Fig. 5.6.4 ED50 component view two

- 1 Power switch
- 2 120 Vac terminals
- 4 Drive axle connection
- 6 Spring tension adjustment, closing force
- 19 Customer ground terminal
- 20 Guide pin



- 1.1 Arm
- 1.2 Adjustment screw
- 1.3 Connecting rod
- 1.4 Shoe
- 1.5 Axle extension
- 1.6 Extended connecting rod

- 2.1 Arm
- 2.2 Track
- 2.3 Pivot pin
- 2.4 Slide shoe
- 2.5 Cover
- 2.6 CPD arm
- 2.7 CPD lever

## 5.7 Arm configurations



### TIPS AND RECOMMENDATIONS

Reference Chapter 15 for pull arm installation.  
Reference Chapter 16 for push arm installation.

Fig. 5.7.1 Push arm kit

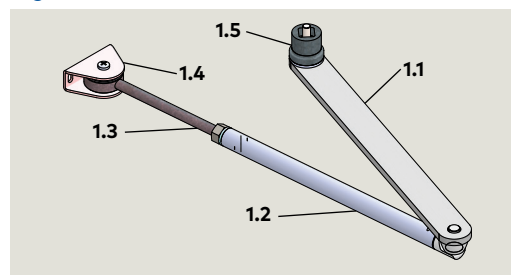


Fig. 5.7.2 Deep push arm kit

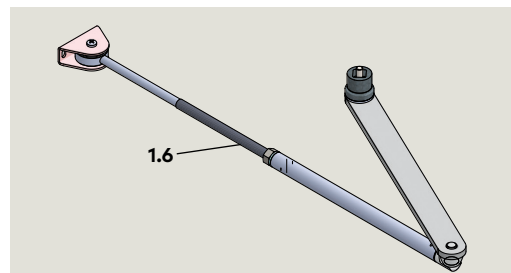


Fig. 5.7.3 Pull arm kit

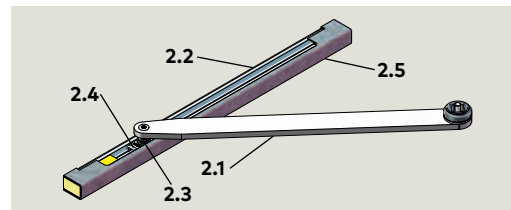
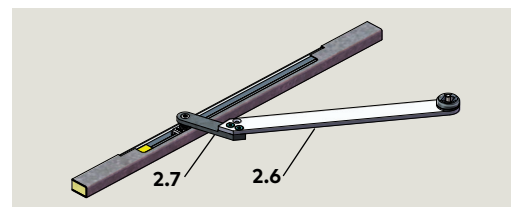


Fig. 5.7.4 CPD pull arm kit



# 6 Accessory kit

## 6.1 ED50 low energy accessory kit

- 1 Decal, Automatic Caution door (both sides)
- 2 Decal, Activate Switch to Operate
- 3 Decal, Push to Operate
- 4 Decal, Pull to Operate
- 5 Decal, AAADM safety Information label, low energy
- 8 Header mounting screw pack DK4608-010
- 8.1 #12 x 2.5 RHWSP (round head wood screw, Philips)
- 8.2 1/4-20 x 1.5 PHSLFP (pan head self tapping, Philips)
- 9 Push arm screw kit DK2719-010
- 9.1 10-24 x 11/2" barrel nut
- 9.2 10-24 x 1" PPHMS
- 10 Pull arm screw kit DK2719-020
- 10.1 10-24 x 11/2" barrel nut
- 10.2 10-24 x 11/4" FHSCS (flat head socket screw)
- 11 1/4-20 x 1" FHMS
- 12 1 1/2" hole plug
- 13 3/8" [10 mm] hole plug
- 14 Communication cable DX4607 for program switch panel
- 15 Program switch panel DX4604
- Manuals not shown.
- 16 Installation manual
- 17 Service manual
- 18 Owner's manual

Fig. 6.1.1 Decal kit, low energy

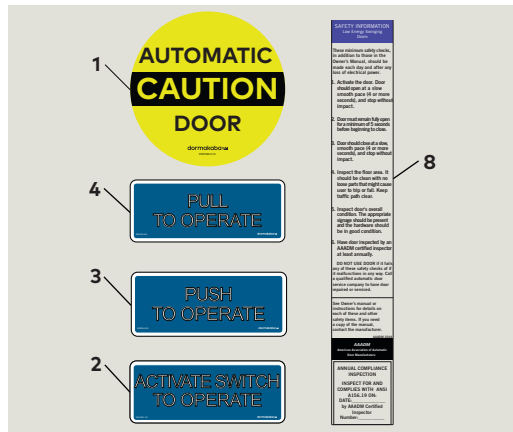


Fig. 6.1.4 Header mounting screw pack

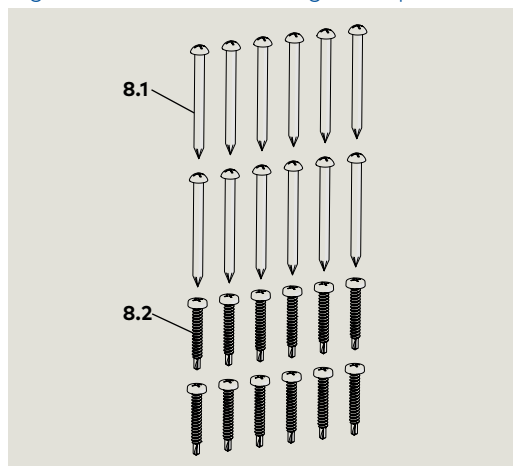


Fig. 6.1.7 Hole plug kit

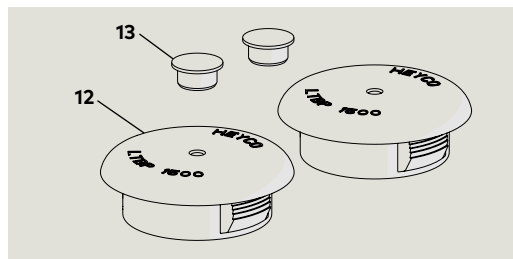


Fig. 6.1.2 Push arm screw kit

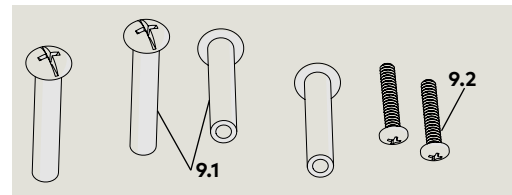


Fig. 6.1.3 Pull arm screw kit

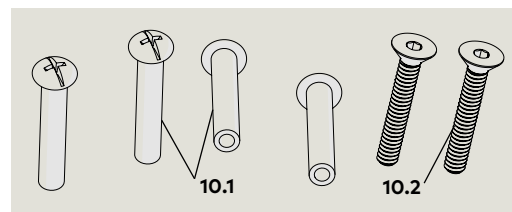


Fig. 6.1.5 Mounting base screw kit

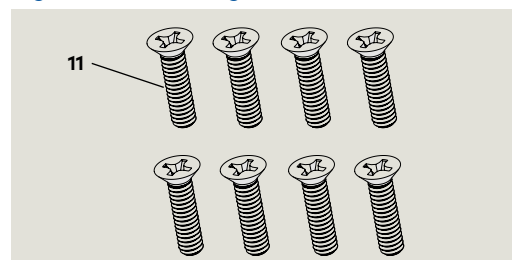


Fig. 6.1.6 Communication cable

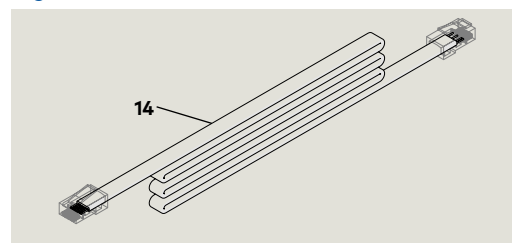
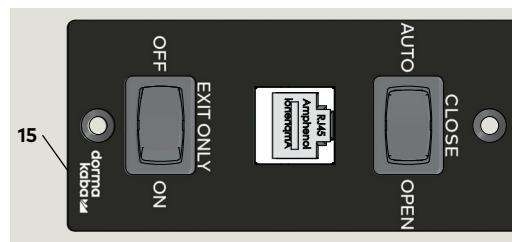


Fig. 6.1.8 Program switch panel



**I TIPS AND RECOMMENDATIONS**

Optional Key switch panels; reference Para. 5.3.

## 6.2 Axle extension kits

- 1 Flat washer
- 2 Conical spring
- 3 O-ring
- 4 M8 SHCS
- 5.2 20 mm (13/16") extension
- 5.3 30 mm (1 3/16") extension
- 5.4 60 mm (2 3/8") extension

Fig. 6.2.1 20 mm

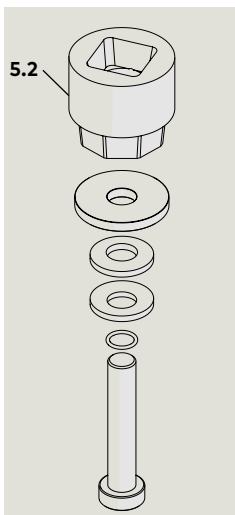


Fig. 6.2.2 30 mm

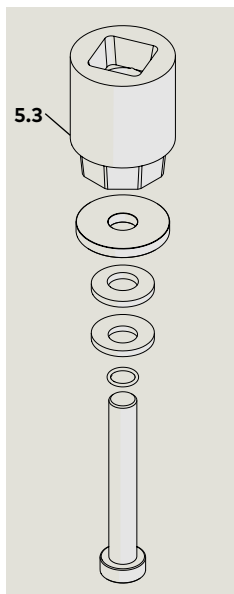
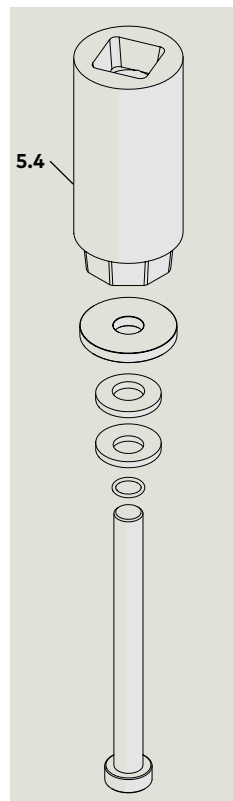
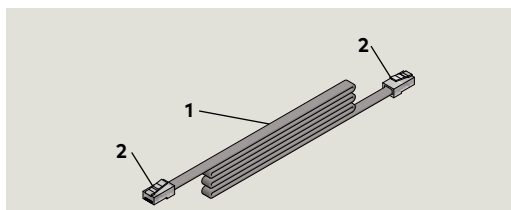


Fig. 6.2.3 60 mm



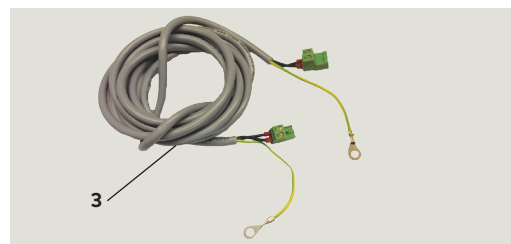
## 6.3 ED50 double door operator connection cables

Fig. 6.3.1 Communication cable



- 1 Communication cable  
DX3485-010,  
250 mm, 9 7/8"  
DX3484-020,  
1030 mm, 40 1/2"
- 2 RJ45 plug
- 3 115 Vac power cable  
DX3484-010,  
1750 mm, 69"  
DX3484-020,  
2400 mm, 94 1/2"

Fig. 6.3.2 115 Vac power cable



# 7 Technical data

## 7.1 ED50 Technical data

### 7.1.1 Required operating conditions

Ambient temperature	5 to 122 °F
Suitable for dry rooms only	Relative air humidity: 93% maximum, non-condensing
Power supply	115 Vac ±10%, 50/60 Hz 6.6 A maximum
Branch circuit protection (provided by others)	15 A maximum, dedicated branch circuit
Protection class	NEMA 1
Power wiring: black, white, bare copper (ground)	12 AWG maximum
Operating noise	Maximum 50 db(A)

### 7.1.2 General specifications

Operator dimensions (W x H x D)	26 3/4" x 2 3/4 x 5 3/4"
Operator weight	26.5 lb
Internal power supply available for accessories	24 Vdc ± 5%, 1.5 A
Maximum door opening angle	95 to 110° depending on installation type

### 7.1.3 Inputs

Maximum wire size Connector plug screw size	16 AWG 1/16"
Activation inputs <b>X4*</b>	Interior, exterior N. O. contact
Safety sensors <b>X5</b>	Swing, approach sides
Night-bank (intercom system) <b>X10</b> 57, 57a	8-24 Vdc/Vac +5%
Night-bank (key switch) <b>X1</b> 35, 3	<b>d2</b> parameter Configure for N.O. or N.C. contact
Deactivation of drive function <b>X6</b> 4, 4a	<b>d1</b> parameter Configure for N.O. or N.C. contact



#### TIPS AND RECOMMENDATIONS

- **\*X4:** terminal board numbers, reference Chapter 10, System accessories.
- Parameters, reference Chapter 21..

### 7.1.4 Outputs

Maximum wire size Connector plug screw size	16 AWG 1/16"
Door status <b>X7</b> 97,98,99	<b>Sr</b> parameter Door closed Com, N.O., N.C. Door open contacts Door closed, locked

### 7.1.5 Integrated functions

Hold open time:		
Automatic opening	<b>dd</b> parameter	0 to 30 s
Night / bank	<b>dn</b> parameter	0 to 30 s
Manual opening	<b>do</b> parameter	0 to 30 s
Door blocking behavior	<b>hd</b> parameter	Automatic, manual door modes
Electric strike delayed opening for locking mechanism	<b>Ud</b> parameter	0 to 4 s
Locking device feedback <b>X3</b> 43, 3		Motor lock
Wind load control, maximum	<b>Fo, Fc</b> parameters	33.7 lb f 150 N
Voltage independent braking circuit	Chapter 18	Adjustable with potentiometer
LED status indicators Service manual	Green Red Yellow	24 Vdc power Error codes Service interval
Program and Exit Only switches	Chapter 9	Auto, Close, Open Exit only; Off, On
User interface	Chapter 9	4 button keypad, 2 digit display
Interface update Service manual		Firmware update
TMP, temperature management program Service manual		Overload protection
IDC, initial drive control		Driving phase optimization
Cycle counter	<b>CC</b> parameter	0 to 1,000,000
Power assist function	<b>hA, hF, hS</b> parameters	Drive support for manual opening of door
Push & go function	<b>PG</b> parameter	Auto opening of door at 4° open

## 7.2 Operating specifications

### 7.2.1 ED50

Maximum power consumption	120 watt	
Opening force N (lbf) <b>F<sub>o</sub></b> parameter	Minimum 20 (4.5)	Maximum 60 (13.5.5)
Manual closing force N (lbf) <b>F<sub>c</sub></b> parameter	Minimum 20 (4.5)	Maximum 60 (13.5)
Maximum door weight, pounds	220 at 48" door width	
Door width	Minimum 28"	Maximum 48"
Maximum opening speed, %/s	27	May be limited by door weight after learning cycle.
Maximum closing speed, %/s	27	

Axle extensions, [mm] inches	[20] 13/16" [30] 1 3/16" [60] 2 3/8"
Reveal depth for pull arm	1 3/16"
Reveal depth for CPD pull arm and CPD lever	2 1.4"
Reveal depth for standard push arm	0 to 8 3/4"
Reveal depth for deep push arm	8" minimum to 11 13/16"

# 8 Operational mode overview

## 8.1 ED50 door closer modes

### 8.1.1 Automatic mode

Door closer mode parameter **hd**=0.  
Door opens automatically following pulse generation by a knowing act device or by push/pull.

### 8.1.2 Manual mode

Door closer mode parameter **hd**=1.  
Designed for doors primarily accessed manually.



#### TIPS AND RECOMMENDATIONS

Parameter descriptions can be found in Chapter 21; Parameters and in ED50 Service Manual, Chapter 14.

### 8.1.3 Power assist

- Available only in door closer mode (**hd**=1), manual opening drive support is automatically adjusted to operator size.
- Parameter **hA** sets door activation angle for power assist function. Once angle reached, drive support provides easier manual opening of the door.
- Parameter **hF**, power assist function. Parameter values greater than 0 provides additional opening force.
- Parameter **hS**, power assist function support for door in closed position.

## 8.2 Low energy product

### 8.2.1 ANSI/BHMA 156.19

ED50 operator is configured to meet requirements of a low energy application per ANSI/BHMA A156.19, U.S. Standard for Power Assist and Low Energy Power Operated Doors.

### 8.2.2 Low energy power operated door

A door with a power mechanism that opens the door upon receipt of a knowing act activating signal, does not generate more kinetic energy than specified in ANSI 156.19, and is closed by a power mechanism or by other means.

Required system safety, as a low energy application, is achieved utilizing the following design factors:

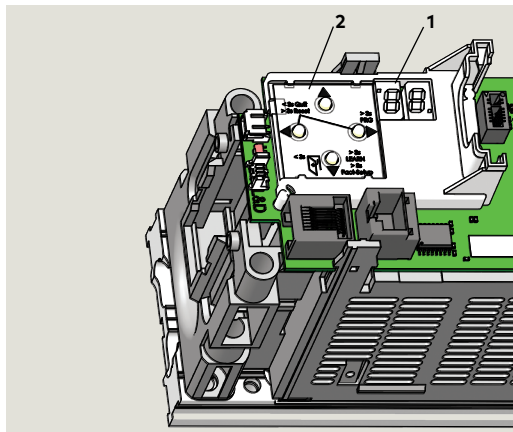
- Reduced dynamic door panel contact forces
- Reduced static door panel contact forces
- Low driving speeds
- Force limitation

# 9 User interface

## 9.1 Overview

- 1 2 digit display
- 2 4 button keypad

Fig. 9.1.1 Operator keypad and display



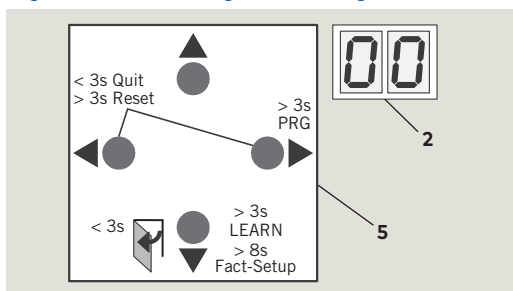
### 9.1.1 Operator user interfaces

- 1. 4 button keypad and 2 digit display.
- 4 button keypad; to select, input and adjust door parameter values.
- 2 digit display; parameter values, error and information codes.

## 9.2 4 button keypad and display

- 2 2 digit display
- 5 Button legend

Fig. 9.2.1 Door hinge side on right



### 9.2.1 4 button keypad

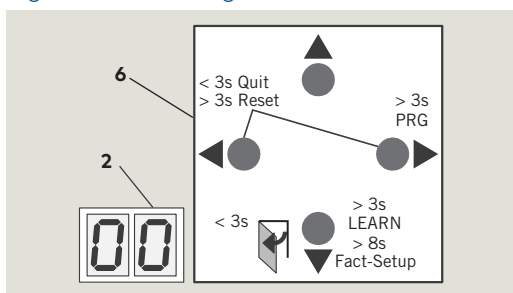
4 button legend is orientated so buttons have same function and position regardless of operator orientation. Button legend can be removed and rotated.

### 9.2.2 4 button keypad functions

▶	Right button	<ol style="list-style-type: none"> <li>1. Access parameter menu, press button &gt; 3 seconds.</li> <li>2. Edit selected parameter.</li> <li>3. Save changed value.</li> </ol>
◀	Left button	<ol style="list-style-type: none"> <li>1. Reset, &gt; 3s</li> <li>2. Quit process, &lt; 3 s.</li> </ol>
◀▶	Both buttons together	<ol style="list-style-type: none"> <li>1. Acknowledge errors, press both buttons &lt; 3 s.</li> <li>2. Reset, press both buttons &gt; 3 s.</li> </ol>
▲	Up button	<ol style="list-style-type: none"> <li>1. Scroll through parameters and error messages.</li> <li>2. Increase parameter value.</li> </ol>
▼	Down button	<ol style="list-style-type: none"> <li>1. Scroll through parameters and error messages.</li> <li>2. Reduce parameter value.</li> <li>3. Opening pulse, press button &lt; 3 s.</li> <li>4. Learning cycle, press button &gt; 3 s.</li> <li>5. Reset with factory setting, press button &gt; 8 s (program switches off).</li> <li>6. Identify operator orientation for display</li> </ol>

- 2 2 digit display
- 6 Button legend rotated 180°

Fig. 9.2.2 Door hinge side on left



### TIPS AND RECOMMENDATIONS

Symbols

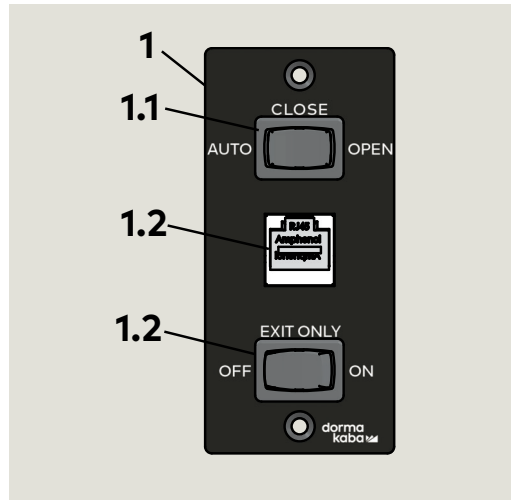
- "<", Less than
- ">", Greater than



### 9.3 Program switch panel

Fig. 9.3.1 Program switch panel

- 1 Program switch panel
- 2 Program switch, 3 position
- 3 Exit Only switch, 2 position
- 4 Comm port for dormakaba handheld



#### 9.3.1 Program switch control modes

- Auto, door opens following pulse generation by a knowing act device or by push/pull.
- Close, door closes automatically, or remains closed.
- Open, door opens automatically and remains open.

#### 9.3.2 Exit only switch

- Used when activation sensors are installed.

#### 9.4.1 Operator status LEDs

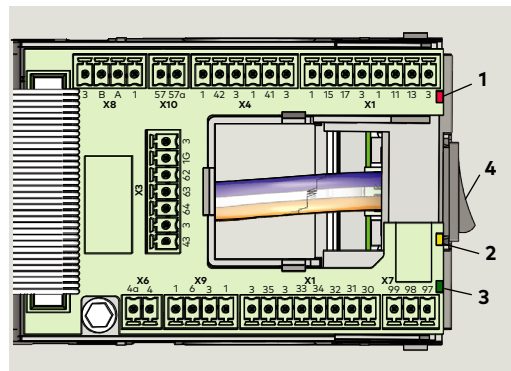
Header cover must be opened to view LEDs.

1. Red LED  
Blinking codes are used to indicate "In\_" information (system status or operating conditions) or certain error codes "E\_".
2. Yellow LED  
Maintenance interval indicator. When illuminated, an indication the operator system has to be serviced.
3. Green LED  
• On, internal 24 Vdc power is On.  
• Off, internal 24 Vdc power is Off.

### 9.4 Operator status LEDs

Fig. 9.4.1 Operator status LEDs

- 1 Red LED
- 2 Yellow LED
- 3 Green LED
- 4 Power switch



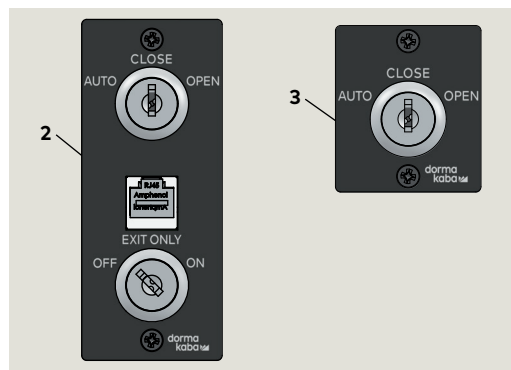
**i** **TIPS AND RECOMMENDATIONS**

Details on LED status codes and maintenance intervals can be found in ED50 service manual, Chapter 15, Troubleshooting Chart.

### 9.5 Optional key switch panels

Fig. 5.3.1 Key switch panels

- 2 Key switch panel, RJ45, DX4604-21C
- 3 Key switch panel DX4604-11C



**i** **TIPS AND RECOMMENDATIONS**

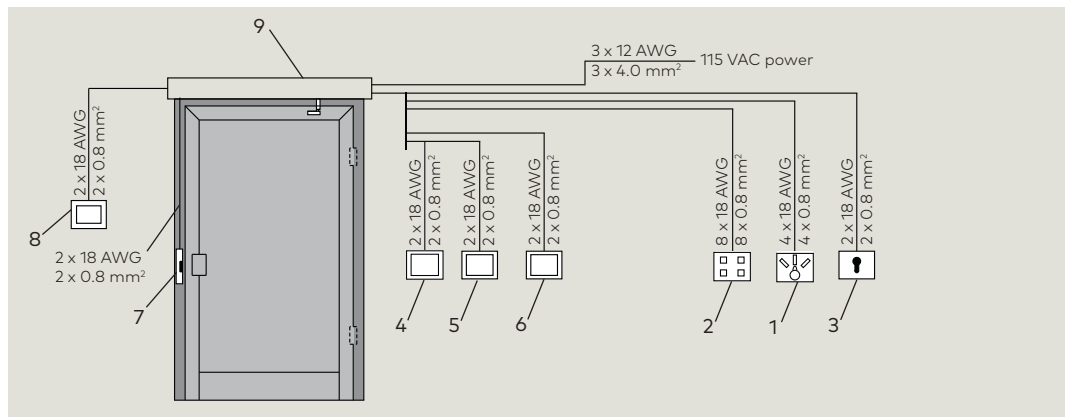
For optional key switch panel wiring, reference Appendix A, Wiring Diagrams.

# 10 System accessories

## 10.1 System accessory electrical connections

- 1 External program switch, mechanical
- 2 External program switch, electronic
- 3 Key switch
- 4 Pushbutton, night / bank
- 5 Pushbutton, interior
- 6 Pushbutton, exterior
- 7 Door locking device
- 8 Manual release switch
- 9 ED50 header

Fig. 10.1.1 Electrical connections, single door



## 10.2 System accessories

### 10.2.1 Overview

ED 50 operators are normally used with system accessories available from dormakabaUSA, Inc. or other manufacturers.

### 10.2.2 Accessory electrical installation

Electrical interfaces from system accessories used with operator must be planned for. This includes routing of wiring from accessories to operator.

### 10.2.3 System accessories, other manufacturers

dormakaba USA, Inc. cannot guarantee compatibility for other manufacturer's accessories. If any of these accessories are used despite this caution, the operator's full range of functions may be unavailable, or the accessories may not work properly.



**WARNING**

Damage to operator or to connected device is also possible!

### 10.2.4 Power for accessories

24 Vdc, 1.5 A (36 watts) is available from the operator for external consumers. This supply has overcurrent protection. If additional power is required, an external power supply must be used.

### 10.2.5 Miscellaneous accessories

- 1. Door status display, red, green

### 10.2.6 Activators

Typical activators:

- 1. Pushbuttons, key switches
- 2. Access control systems
- 3. Telephone systems
- 4. Intercoms



### TIPS AND RECOMMENDATIONS

Refer to Chapter 6, Technical data for electrical interface requirements.

### 10.2.7 Locking devices

Typical locking devices:

- 1. Electric strike plates
- 2. Electromagnetic locks
- 3. Electric locks

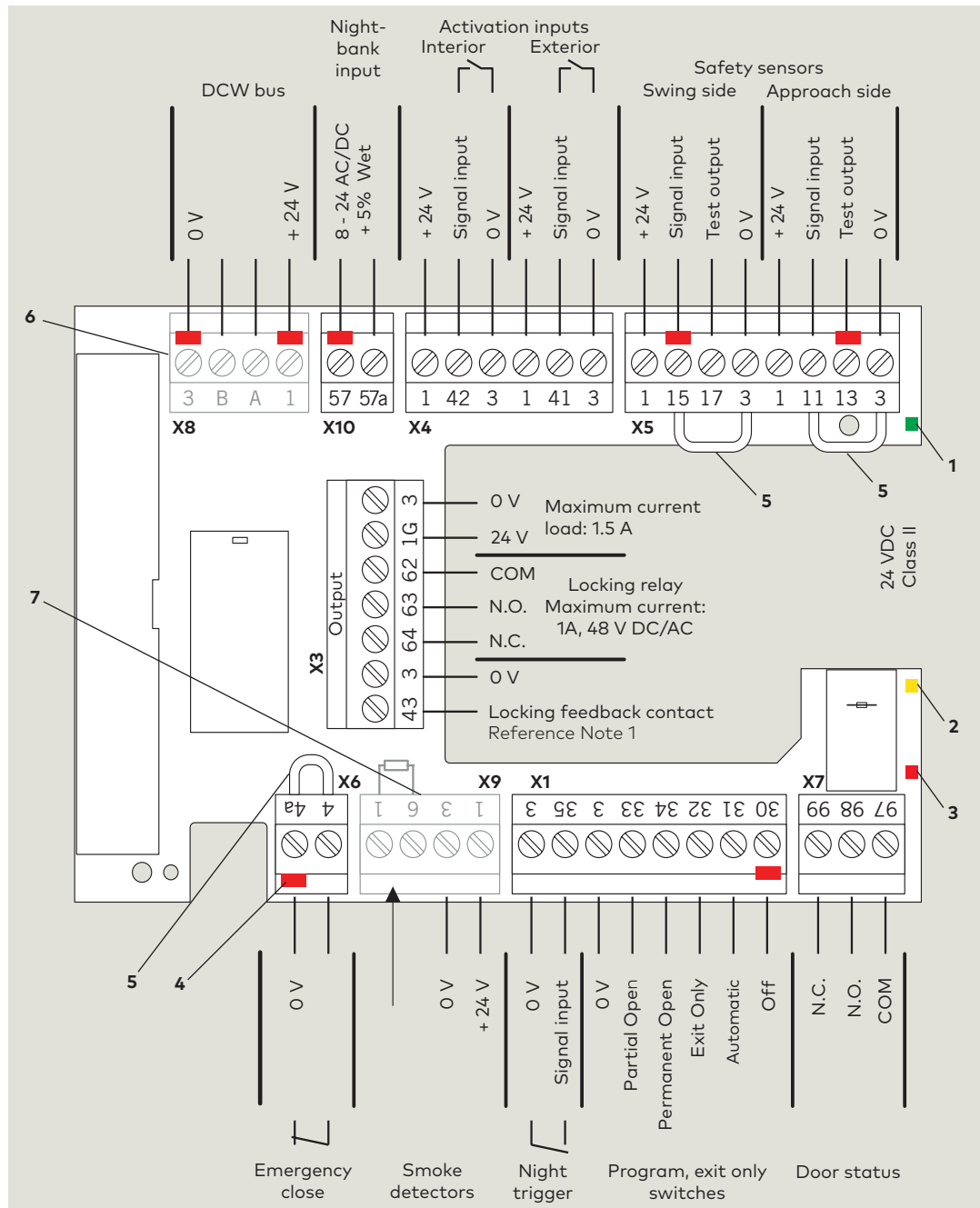
To insure that operator and locking device work safely when connected together, locking device must comply with following:

- 1. Operating voltage, power supply from operator, 24 Vdc, ±5 %.
- 2. Operating voltage, external power supply, 48 Vdc/Vac maximum.
- 3. Locking device relay contact, maximum load, 1 A.
- 4. Electric strike plate duty factor, 30% minimum.
- 5. Motor lock duty factor, 100%.

10.3 ED50 terminal board interfaces

Fig. 10.3.1 Terminal board electrical connections

- 1 Green LED (Para. 9.4)
- 2 Yellow LED (Para. 9.4)
- 3 Red LED (Para. 9.4)
- 4 Key (red insert) location in socket. Assigned plug has tab in same location broken off.
- 5 Jumpers, factory installed at following terminals:
  - 4 and 4a
  - 15 and 3\*
  - 11 and 3\*
 \* Remove jumpers if safety sensors installed.
- 6 DCW® upgrade card plug (n/a)
- 7 Fire protection upgrade card plug (n/a)



**WARNING**

ED50 115 Vac branch circuit disconnect must be Off while making accessory connections!



**TIPS AND RECOMMENDATIONS**

- Use documentation provided with each device for electrical installation.
- Do not connect system accessories to board until operator has been commissioned and learning cycle performed (Chapter 22).

Note 1: Terminals 3 and 43 also used for swing side overhead presence sensor input when parameter ST is set to 7 or 8.

# 11 ED50 door signage

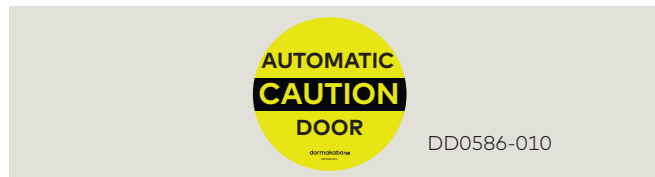
## 11.1 Low energy operator

### 11.1.1 Overview

Signage and warnings are specified in ANSI /BHMA A156.19, American National Standard for power assist and low energy power operated doors.

### 11.1.2 All low energy doors.

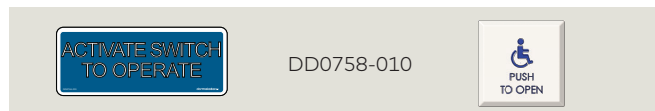
Fig. 11.1.1 AUTOMATIC CAUTION DOOR decal



1. AUTOMATIC CAUTION DOOR decal.
  - All low energy doors shall be marked with signage visible from both side of door with the words "AUTOMATIC CAUTION DOOR".
  - Signs shall be mounted  $50" \pm 12"$  from floor to centerline of sign.

### 11.1.3 Knowing act switch used to initiate door operation.

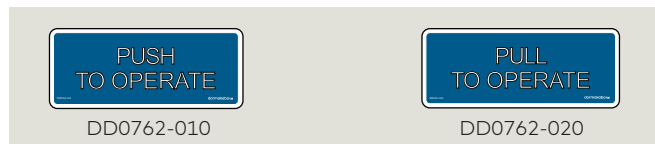
Fig. 11.1.2 ACTIVATE SWITCH TO OPERATE decal



1. ACTIVATE SWITCH TO OPERATE decal.
  - When a knowing act device is used to initiate operation of door operator, door shall be provided with sign on each side of door where switch is operated with message "ACTIVATE SWITCH TO OPERATE".

### 11.1.4 Push/Pull used to initiate door operation.

Fig. 11.1.3 PUSH TO OPERATE, PULL TO OPERATE decals



1. PUSH TO OPERATE, PULL TO OPERATE decals.
  - When push/pull is used to initiate operation of door operator, doors shall be provided with the message "PUSH TO OPERATE" on push side of door and "PULL TO OPERATE" on pull side of door.

## 11.2 Door signage, low energy single swing door

Fig. 11.2.1 Knowing act device initiation of door operation

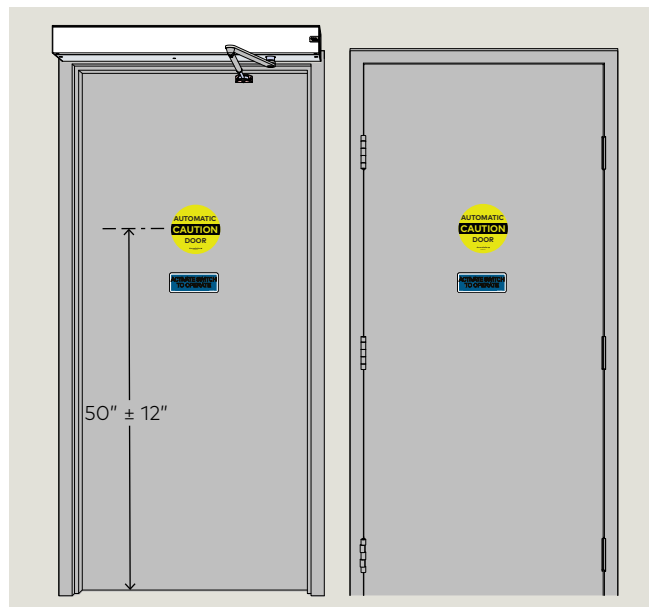
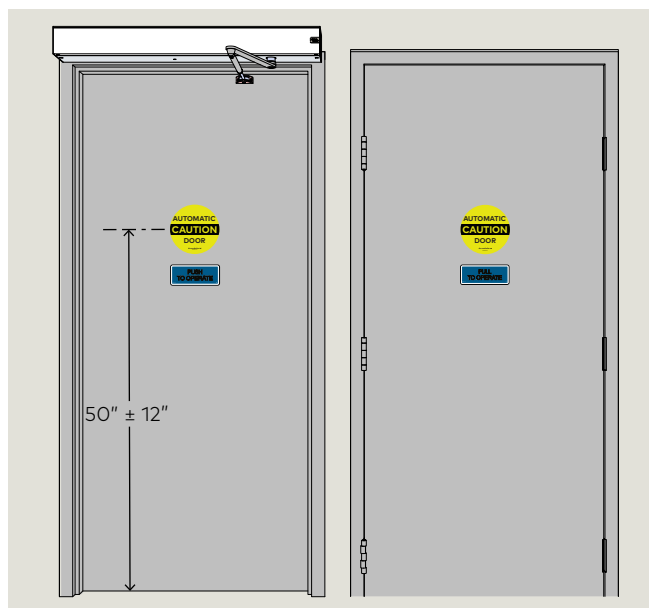


Fig. 11.2.2 Push/Pull initiation of door operation



### 11.3 Door signage, low energy double swing doors

Fig. 11.3.1 Knowing act, non-hinge side

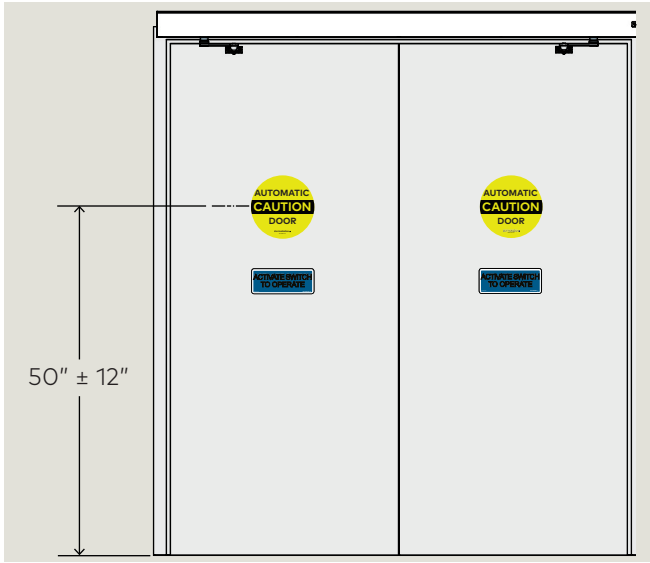


Fig. 11.3.2 Knowing act, hinge side



Fig. 11.3.3 Push/Pull, push to operate

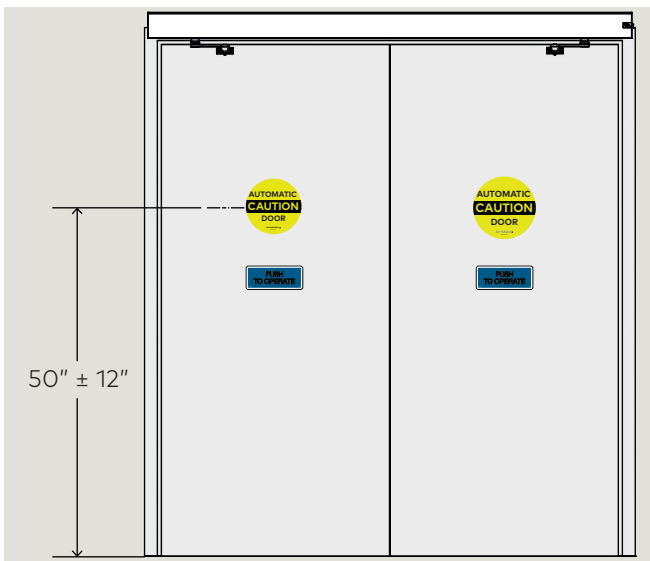


Fig. 11.3.4 Push/Pull, pull to operate

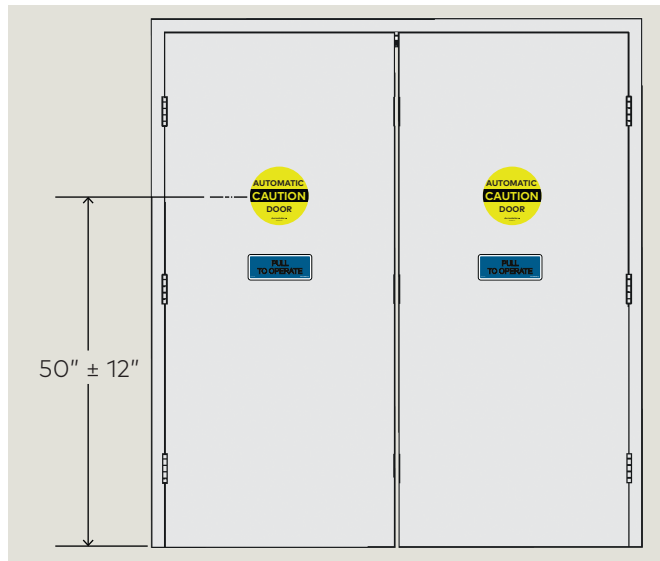


Fig. 11.3.5 Double egress, RH, knowing act

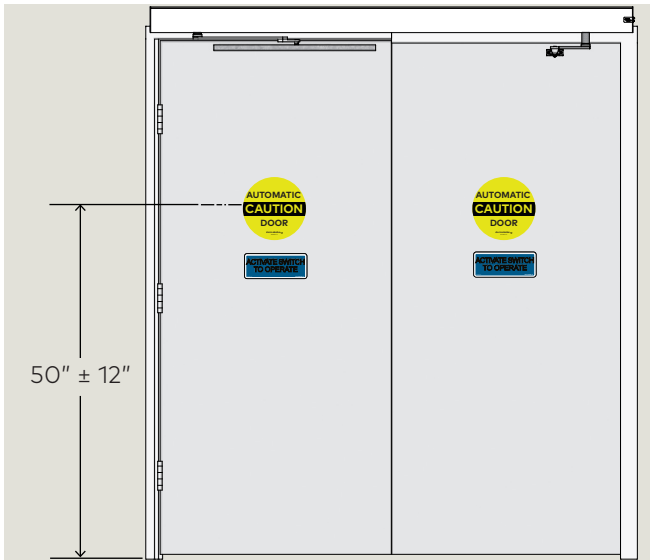
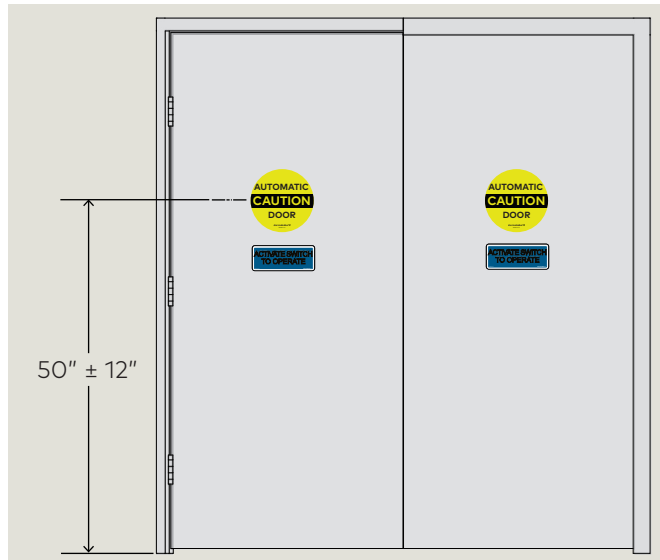


Fig. 11.3.6 Double egress, RH, knowing act



## 11.4 Safety label, low energy swing doors

### 11.4.1 Low energy swinging door safety information label

This AAADM label outlines safety checks that should be performed daily on low energy swinging door controlled by an ED50 operator.

### 11.4.2 Safety information label location

Place label in a protected, visible location on door frame, near program switch plate if possible.

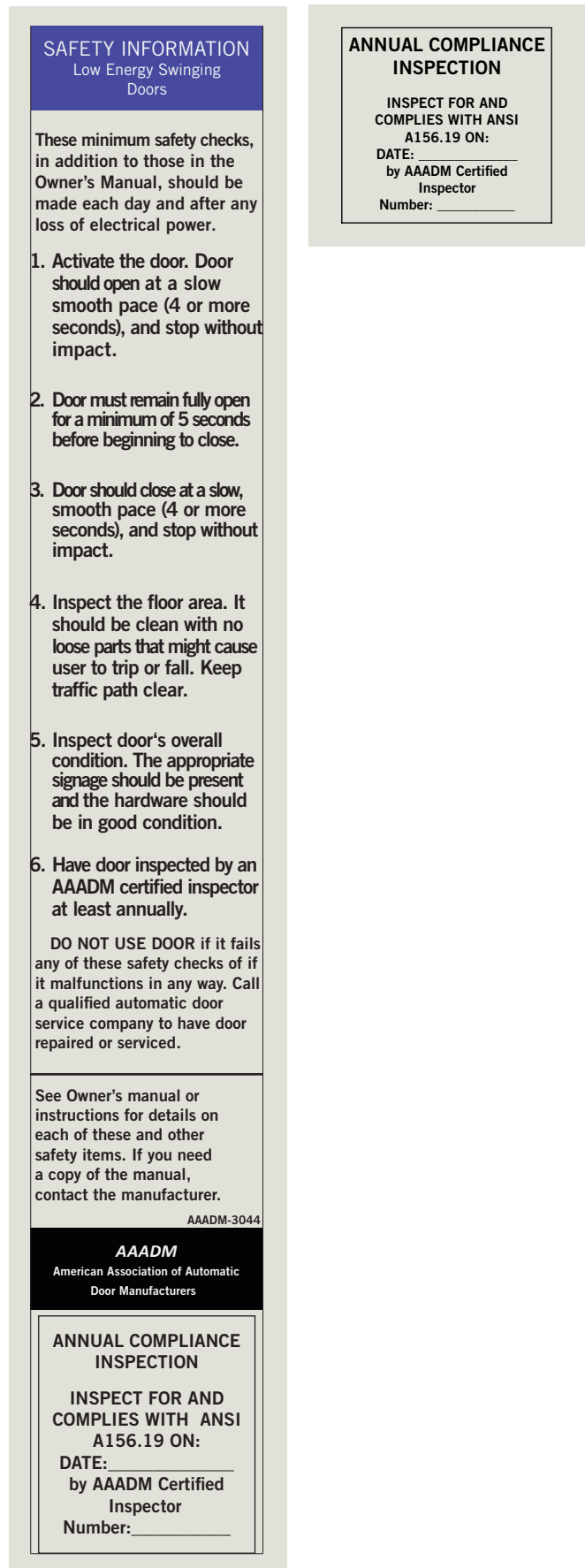
### 11.4.3 Annual compliance section of label

This section of label is only completed on low energy swing doors that comply with ANSI/BHMA A156.19 standard and pass inspection by a AAADM certified dormakaba USA, Inc. technician.

### 11.4.4 Additional annual compliance inspection labels

Place additional labels over annual compliance inspection section of safety information label.

Fig. 11.4.1 Safety labels



# 12 ED50 arm configurations

## 12.1 Single swing door arm configurations

Fig. 12.1.1 Pull arm

- 1 Pull arm
- 2 Track
- 3 Pivot pin, 1/2" or 1"
- 4 Program switch panel

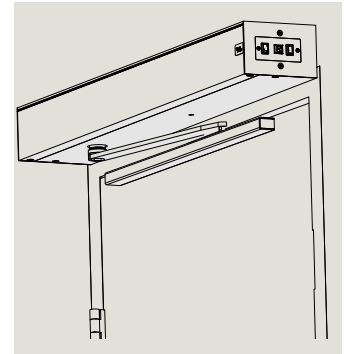
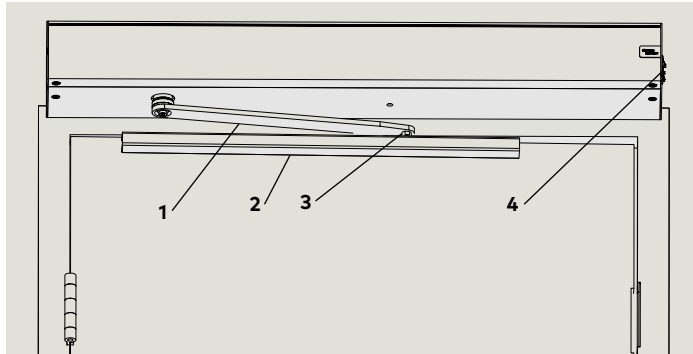


Fig. 12.1.2 Deep pull arm

- 1 Pull arm
- 2 Track
- 3 Pivot pin, 1/2" or 1"
- 4 Program switch panel
- 5 Pull arm CPD
- 6 CPD lever

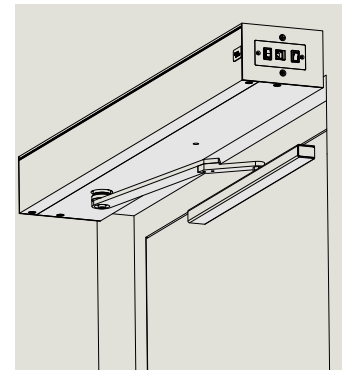
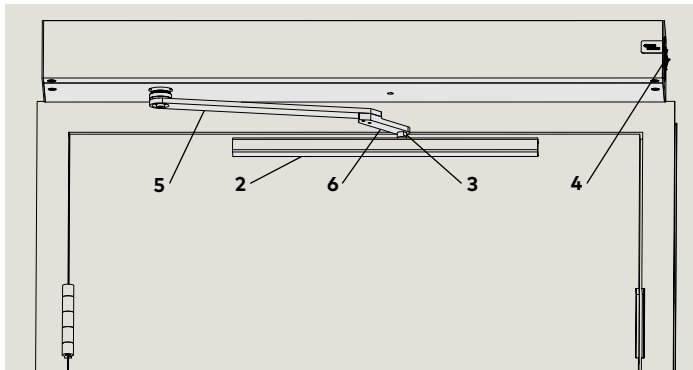


Fig. 12.1.3 Push arm

- 1 Arm
- 2 Adjustment screw
- 3 Connecting rod
- 4 Shoe
- 5 Program switch panel
- 6 Door hinge side

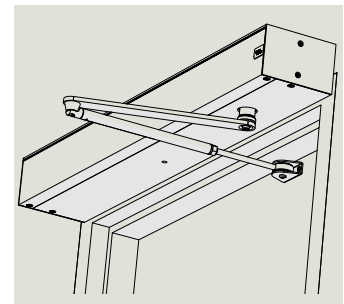
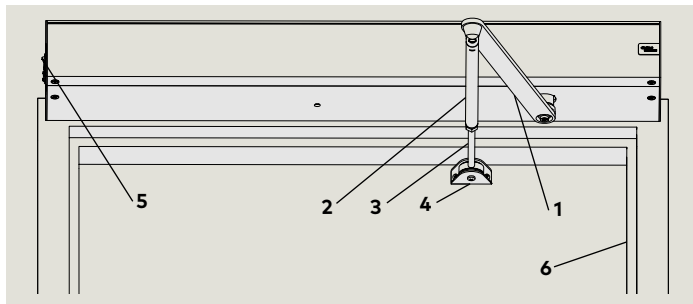


Fig. 12.1.4 Deep push arm

- 1 Arm
- 2 Adjustment screw
- 3 Connecting rod, extended length
- 4 Shoe
- 5 Program switch panel
- 6 Door hinge side

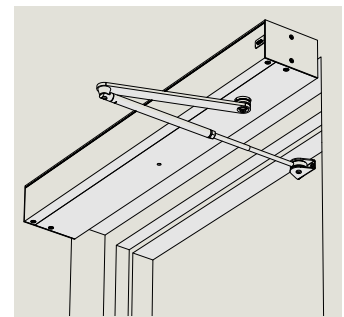
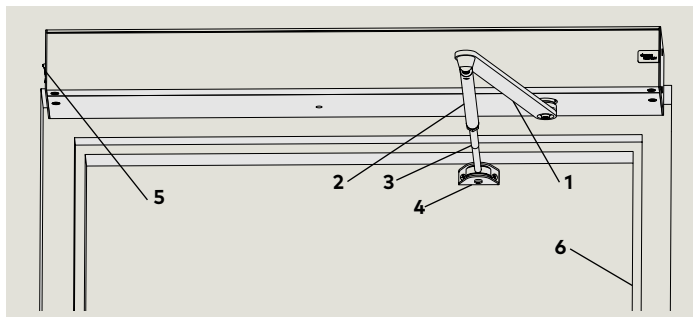


Fig. 12.1.5 LH offset pivot door, surface applied header, push arm

- 1 Push arm
- 2 Shoe
- 3 Top of door offset pivot hardware (by others)
- 5 Bottom of door offset pivot hardware (by others)

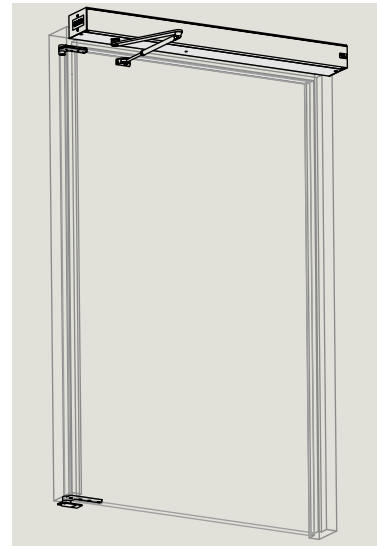
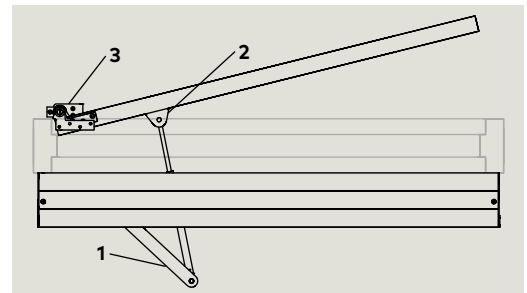


Fig. 12.1.6 RH center hung door, surface applied header, push arm

- 1 Push arm
- 2 Shoe
- 3 Top of door offset pivot hardware (by others)
- 5 Bottom of door offset pivot hardware (by others)

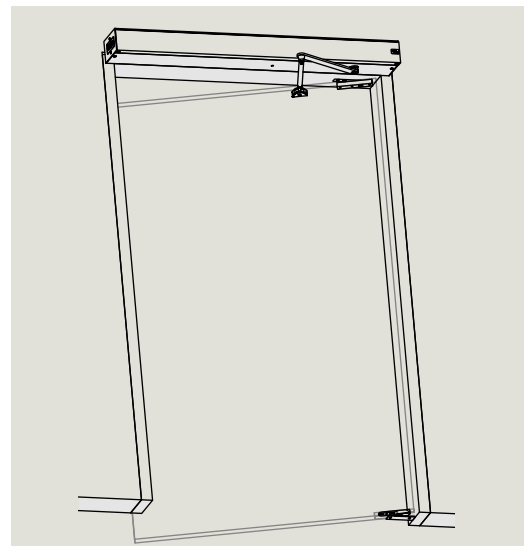
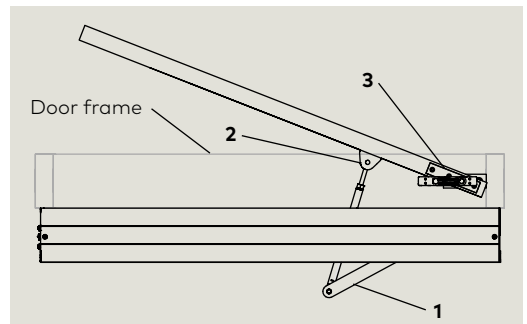
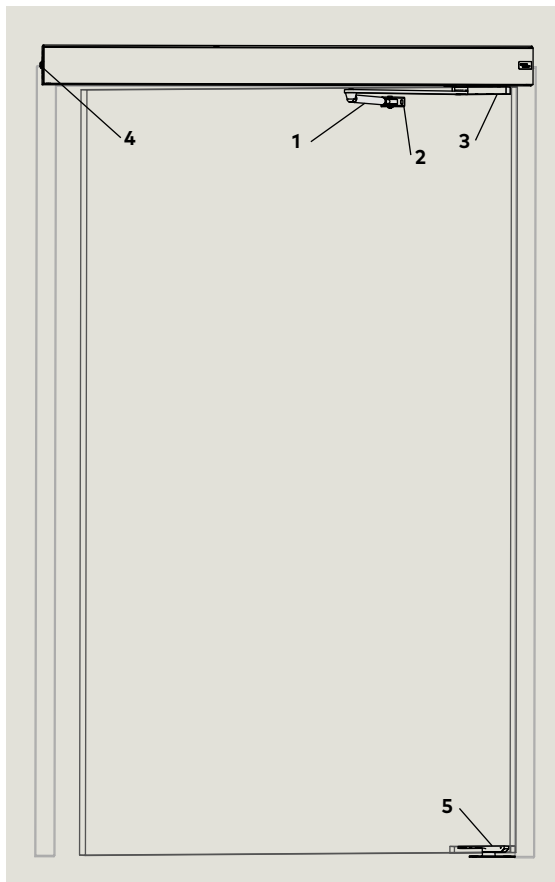
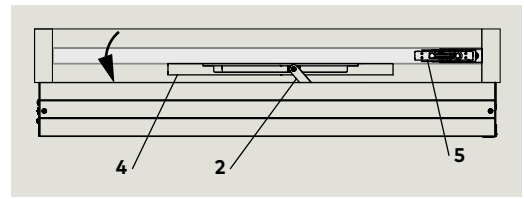
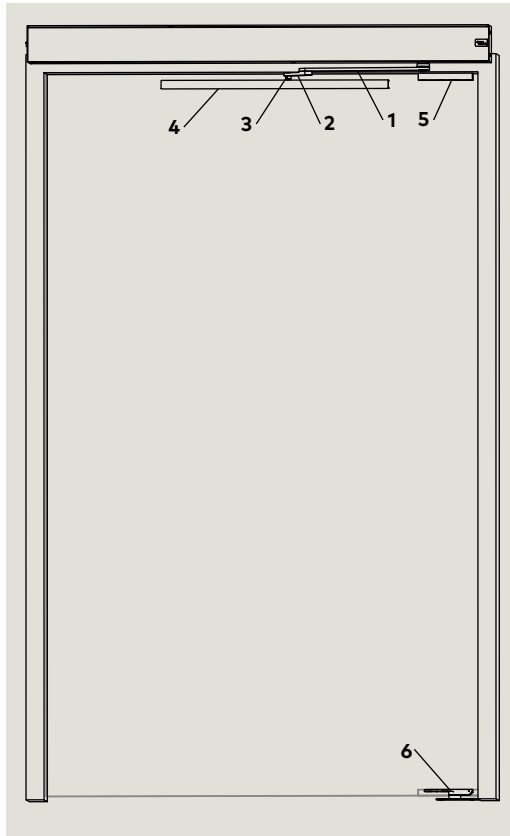




Fig. 12.1.8 LH center hung door, surface applied header, CPD pull arm

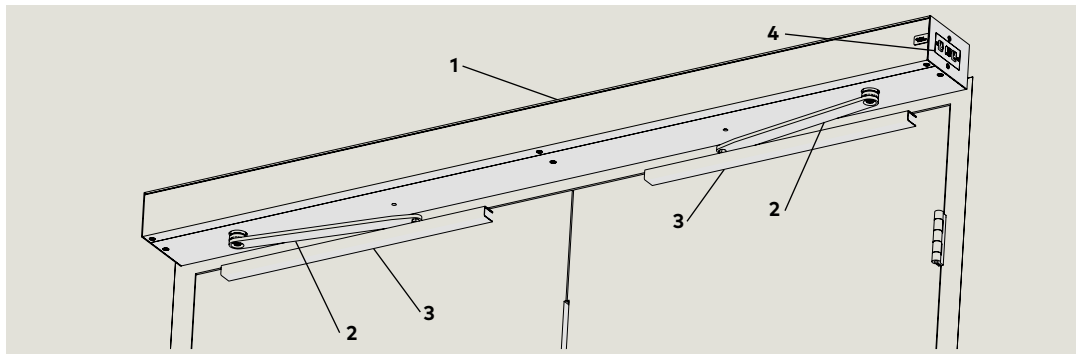
- 1 CPD pull arm
- 2 CPD lever
- 3 Pivot pin, 1/2" or 1"
- 4 Track
- 5 Top of door center hung hardware (by others)
- 6 Bottom of door center hung hardware (by others)



## 12.2 Double swing door arm configurations

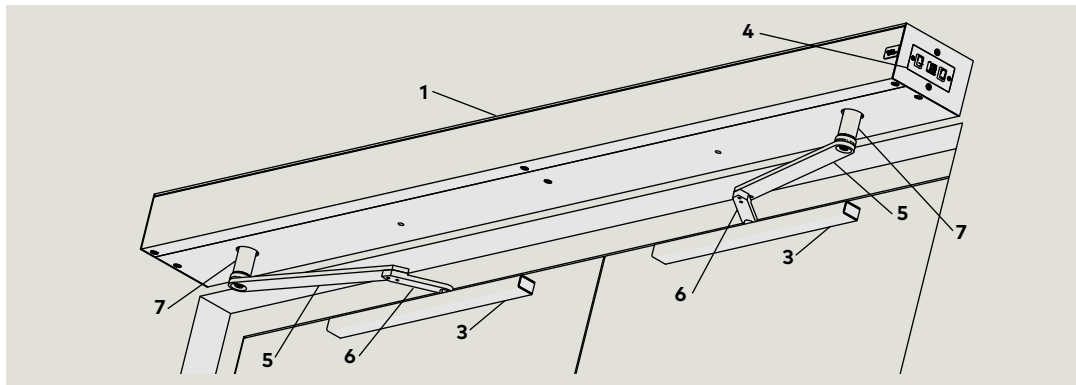
- 1 Double header
- 2 Pull arm
- 3 Track
- 4 Program switch panel

Fig. 12.2.1 Double door pull arm



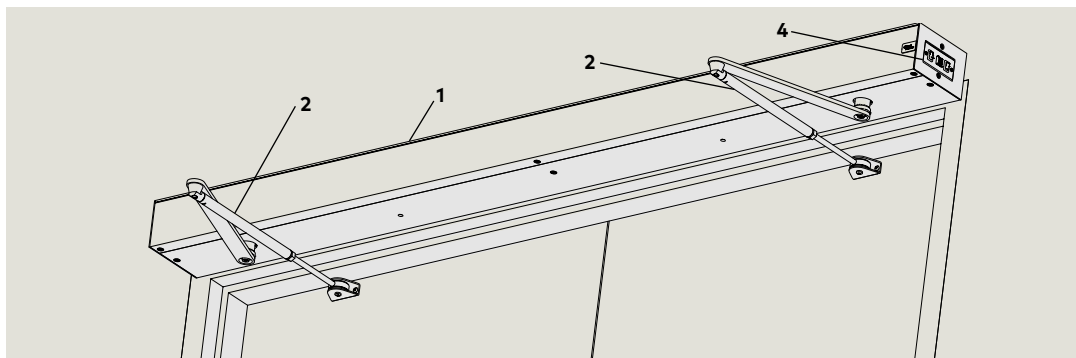
- 1 Double header
- 3 Track
- 4 Program switch panel
- 5 CPD pull arm
- 6 CPD lever
- 7 Axle extension

Fig. 12.2.2 Double door CPD pull arm



- 1 Double header
- 2 Push arm
- 4 Program switch panel

Fig. 12.2.3 Double door push arm



- 1 Double header
- 2 Push arm
- 3 Track
- 4 Program switch panel
- 5 CPD pull arm
- 6 CPD lever
- 7 Axle extension

Fig. 12.2.4 Double egress, LH

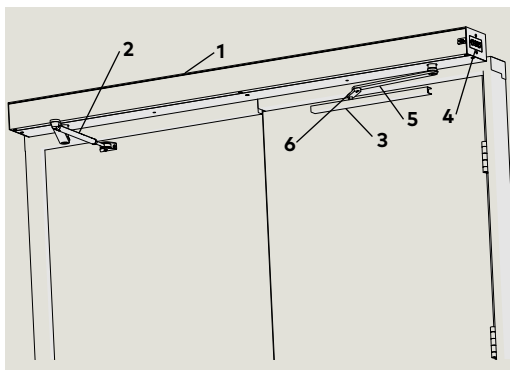
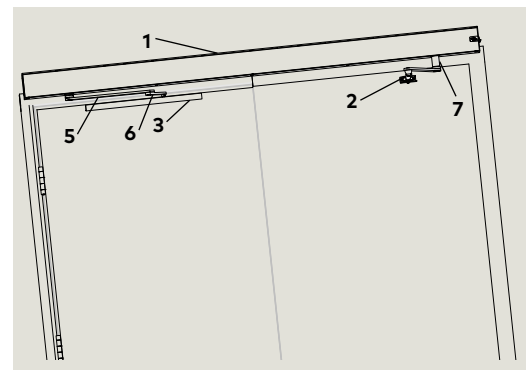


Fig. 12.2.5 Double egress, RH



# 13 Header installation

## 13.1 Installation preparation

### NOTICE

Installation steps listed in Chapter 13 are a recommendation. Structural, local conditions, available tools, or other factors or circumstances may require modification to these steps.



### WARNING

Review safety information in Chapter 3!



### WARNING

ED50 header assembly should be installed by trained and knowledgeable installers experienced in installation and commissioning of automatic door closers. The installer should be familiar with all applicable local and national building code requirements, and with requirements of current ANSI/BHMA standard A156.19, Power assist and low energy power operated doors.



### WARNING

Operator 115 Vac branch circuit disconnect must be OFF at start of installation!

#### 13.1.1 dormakaba USA, Inc. hardware

Locate shipping containers for header assembly and ED50 operator.

#### 13.1.2 Door frame and door

1. Insure area around door frame, adjacent walls and door is readily accessible and free of objects and debris.

#### 13.1.3 Accessories

1. Verify accessories planned for or in place for the door. Chapter 10, system accessories, list typical accessory types for ED50 operators.



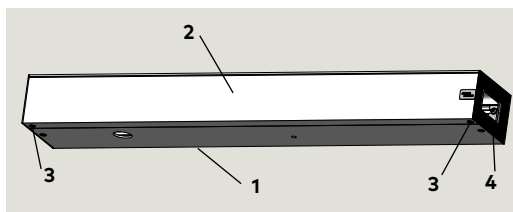
### TIPS AND RECOMMENDATIONS

Accessory wiring to header should be planned for prior to header installation.

## 13.2 Unpack header assembly

- 1 ED50 4" x 6" single door header
- 2 Header cover
- 3 Cover screws
- 4 Program switch panel mounting surface

Fig. 13.2.1 Single door header



#### 13.2.1 Unpack contents from header.

1. Remove header assembly from package.
2. Open cover secured by two screws (three for pair doors header) and remove cover.
3. Remove contents from header.

#### 13.2.2 Single door header contents.

- Low energy accessory installation kit, either (Chapter 6).
- Program switch panel assembly (Para. 5.2).
- Box containing pull arm or push arm kit.

#### 13.2.3 Double door header content additions to para. 13.2.2.

- Low energy Accessory installation kit.
- Box containing pull arm or push arm kit.
- 115 Vac power connecting cable (Para. 6.3).
- Communication cable (Para. 6.3).

### 13.3 Remove operator from mounting plate

- 1 M6 x 10 SHCS
- 2 115 Vac operator to mounting plate cable

Fig. 13.3.1 Operator top view, M6 x 10 SHCS locations

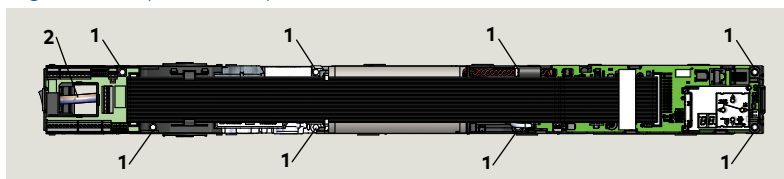
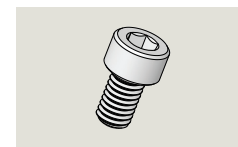


Fig. 13.3.2 M6 x 10 SHCS



- 3 Guide pin
- 4 115 Vac operator to mounting base connector
- 9 Mounting plate

Fig. 13.3.3 Operator side view, retaining pin

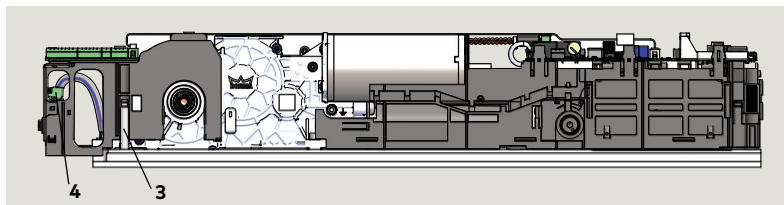
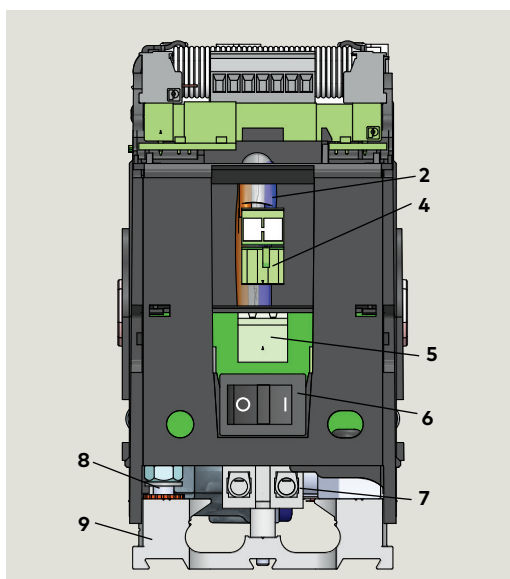


Fig. 13.3.4 Operator power switch side view



- 11 M6 x 10 SHCS mounting hole
- 2 115 Vac operator to mounting plate cable
- 3 Guide pin
- 4 115 Vac operator to mounting plate plug
- 5 115 Vac socket
- 6 Power switch
- 7 115 Vac terminal block
- 8 Ground terminal
- 9 Mounting plate

**13.3.1 Remove 115 Vac plug from socket.**

1. Unplug 115 Vac plug (4) from its socket (5) above power switch.

**13.3.2 Remove operator from mounting plate.**

2. Use 5 mm hex T-handle to loosen eight M6 x 10 SHCS (1).

**TIPS AND RECOMMENDATIONS**

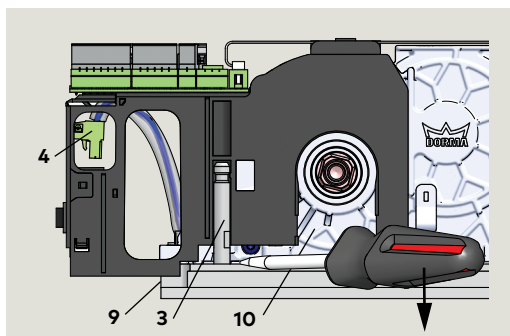
Insure all eight fasteners are free of the mounting plate.

3. Place screwdriver blade in gap between operator drive unit and mounting plate; carefully move operator up from mounting plate.

**TIPS AND RECOMMENDATIONS**

Guide pin resistance requires screwdriver to start operator removal from mounting base.

Fig. 13.6.5 Lift operator from mounting plate



- 3 Guide pin
- 4 115 Vac operator to mounting plate plug
- 9 Mounting plate
- 10 Operator drive unit

4. Lift operator from mounting plate and set aside.

## 13.4 Single header installation

### 13.4.1 Single header installation preparation

1. Door frame installed.
2. Confirm header width.
  - Header width equals door frame width plus three inches.
3. Confirm handing of door with header.
4. Determine type of door frame or header mounting surface.
5. Determine type and location of studs, or wall material, above door frame.
6. Mark stud locations on wall above door frame.
7. Select header mounting screws (Chapter 6, Accessory kits).

Fig. 13.4.1 Door frame width

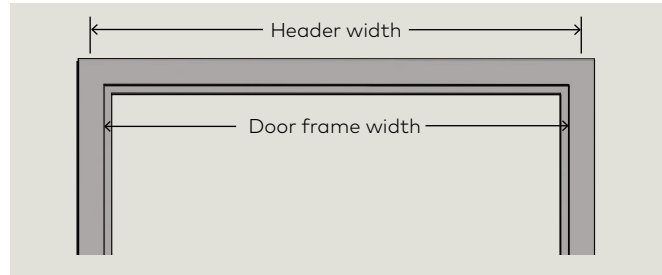


Fig. 13.4.2 Header width

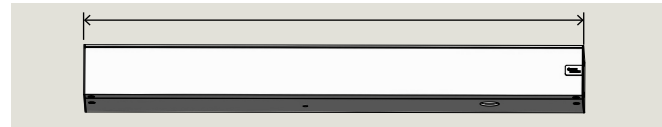
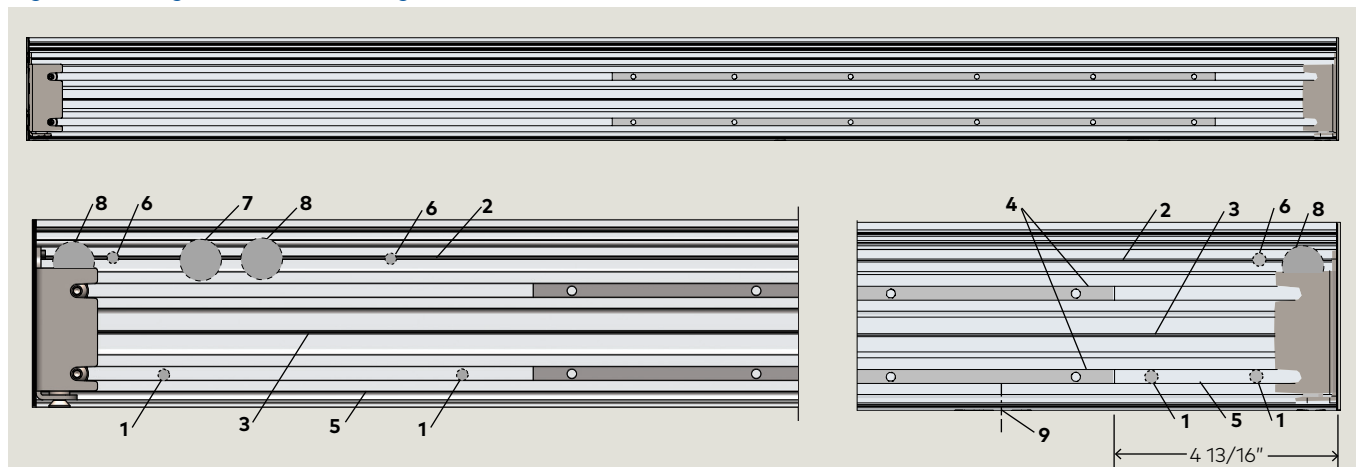


Fig. 13.4.3 Single header mounting holes, conduit holes



- 1 Bottom mounting hole
- 2 Top V-groove
- 3 Bottom V-groove in header center channel
- 4 Header track
- 5 Bottom slide channel
- 6 Top mounting hole, locate on stud centerline (locations shown are for illustration only)
- 7 Low voltage wiring
- 8 115 VAac wiring (Alternate locations)
- 9 Operator axle centerline

### 13.4.2 Drill holes in header.

1. Drill four 1/4" holes in header bottom slide channel, two on header axle side and two on header door strike side.
2. Drill two holes in header center channel on door strike side for 115 Vac and low voltage wiring.



#### TIPS AND RECOMMENDATIONS

If 115 Vac wiring is located on door swing side, drill hole for wiring on header axle side.

### 13.4.3 Install program switch panel.

1. Install program switch panel in header (Para. 13.5).

### 13.4.4 Mount header to door frame.

1. Using applicable installation template (Para. 13.7 - 13.13) for reference, locate header on door frame.
2. Drill holes into door frame using header bottom slide channel 1/4" hole locations.
3. Fasten header to wall using selected screw.
  - Use shims as required to make header square to door frame.

#### CAUTION

Header must be square, level and plumb with door and door frame!

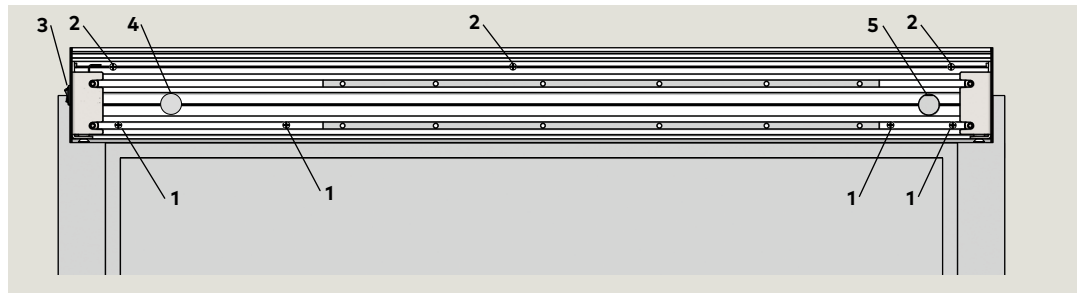
4. Drill 1/4" holes in header top V-groove on centerline of marked stud locations and secure to wall using selected screw.

#### CAUTION

After drilling holes, clean all metal debris from header!

Fig. 13.4.4 Header located on door frame

- 1 Screws in bottom slide channel
- 2 Screws in top V-groove (located on stud centerlines)
- 3 Program switch panel (may be in different location)
- 4 Low voltage wiring
- 5 115 Vac wiring (may be in different location)



### 13.5 Install program switch panel in header

Fig. 13.5.1 Program switch panel installed in header

- 1 Program switch panel
- 2 1/8-32 x 1/4 FHMS
- 3 Hole for operator axle

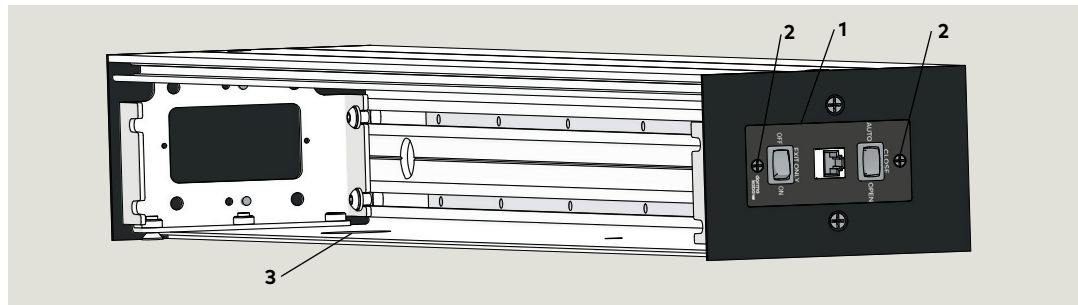
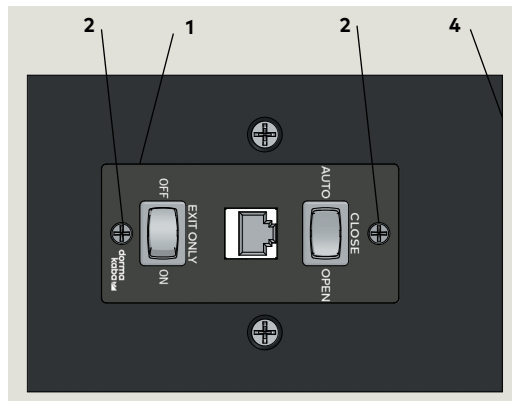


Fig. 13.5.2 Program switch panel

- 1 Program switch panel
- 2 1/8-32 x 1/4 FHMS
- 4 Door frame header edge



#### 13.5.1 Fasten program switch panel to header door strike side.

1. Fasten program switch panel to header using two 1/8-32 x 1/4 FHMS supplied with program switch panel assembly.



#### TIPS AND RECOMMENDATIONS

Lack of adequate space between side of header and door frame may require program switch panel to be installed at another location on header or door frame.

- Program switch panel cable length is 36". Refer to Para. 14.7.



#### TIPS AND RECOMMENDATIONS

For optional Key switch panels, reference Para. 5.3 and Appendix A, Wiring Diagrams.

## 13.6 Double header installation

### 13.6.1 Double header installation preparation

1. Door frame installed.
2. Confirm header width.
  - Header width equals door frame width plus three inches.
3. Determine type and location of studs, or wall material, above door frame.
4. Mark stud locations on wall above door frame.
5. Select header mounting screws (Chapter 6, Accessory kits).

Fig. 13.6.1 Header and door frame width

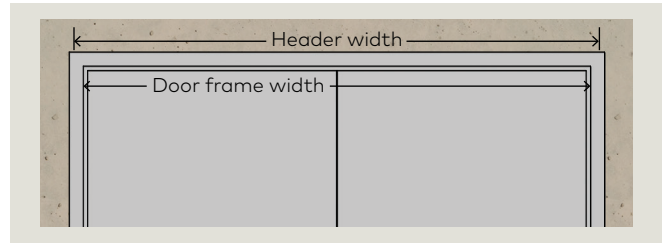
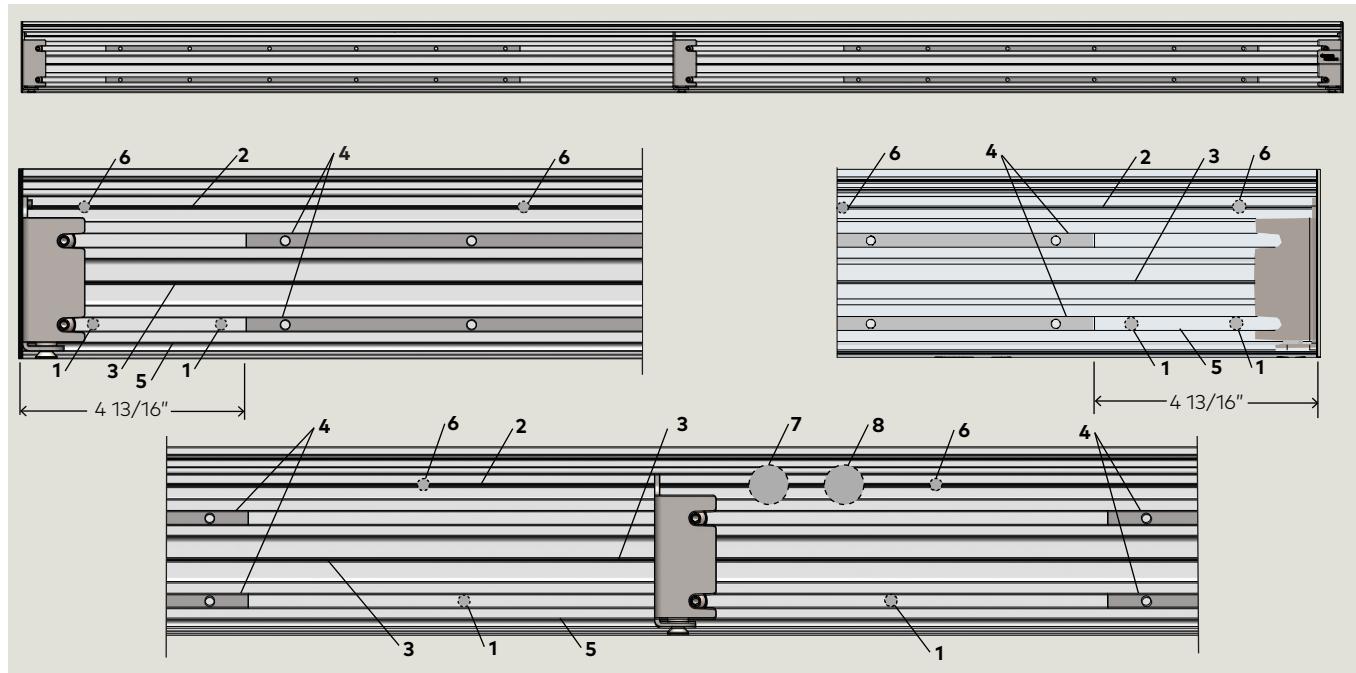


Fig. 13.6.2 Double header mounting holes, conduit holes



- 1 Bottom mounting hole
- 2 Top V-groove
- 3 Bottom V-groove
- 4 Header track
- 5 Bottom slide channel
- 6 Top mounting hole located on stud centerline
- 7 Low voltage wiring (location may change)
- 8 115 Vac wiring (Location may change)

### 13.6.2 Drill holes in header.

1. Drill six 1/4" holes in header bottom slide channel, two on each side and two in middle of header.
2. Drill two holes in center channel in middle of header for 115 Vac and low voltage wiring.



#### TIPS AND RECOMMENDATIONS

If 115 Vac wiring is located on a door swing side, drill hole for wiring on that side.

### 13.6.3 Install program switch panel.

1. Install program switch panel in header (Para. 13.8) on active door side.

### 13.6.4 Mount header to door frame.

1. Using applicable installation template (Para. 13.7 - 13.13) for reference, locate header on door frame.

2. Drill holes into door frame using header bottom slide channel 1/4" hole locations.
3. Fasten header to wall using selected screw.
  - Use shims as required to make header square to door frame.

#### CAUTION

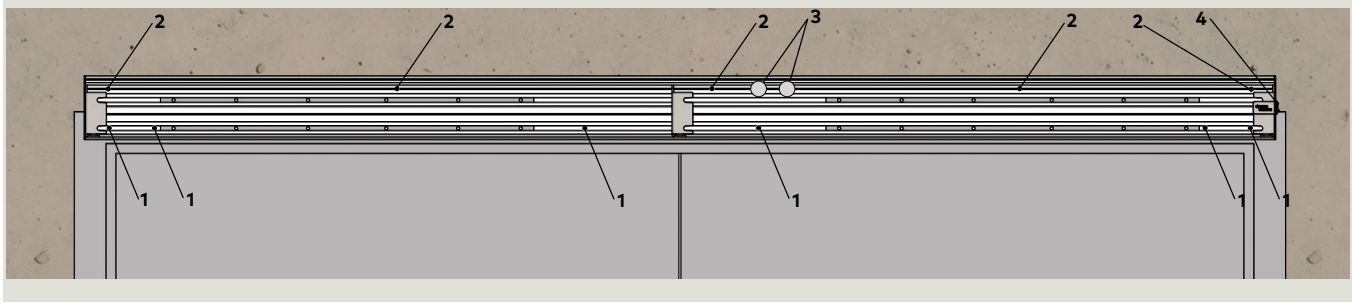
Header must be square to door frame!

4. Drill 1/4" holes in header top V-groove on centerline of marked stud locations and secure to wall using selected screw.

#### CAUTION

After drilling holes, clean all metal debris from header!

Fig. 13.6.3 Header located on door frame/wall

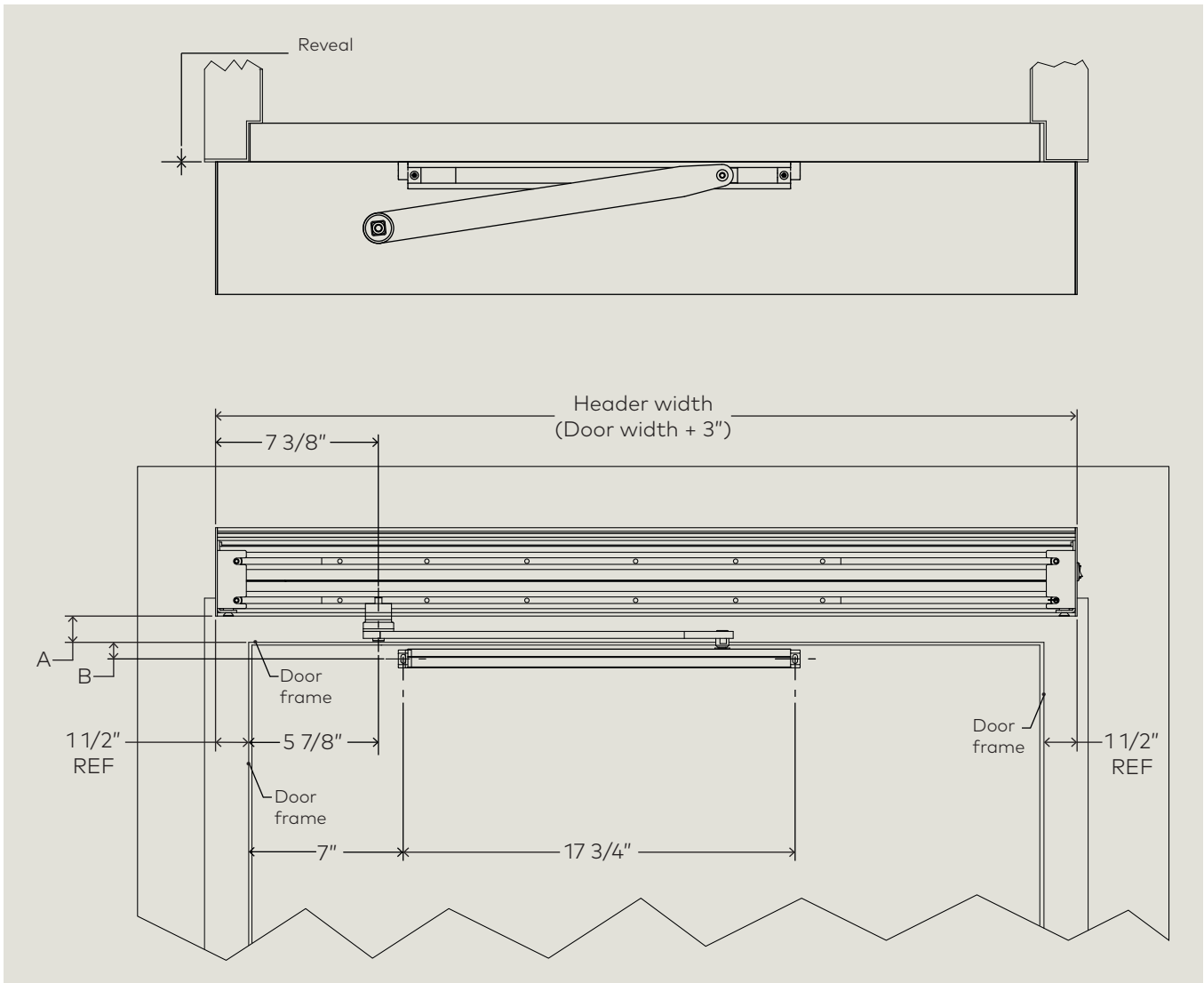


- |   |   |
|---|---|
| <p><b>1</b> Screws in bottom slide channel</p> <p><b>2</b> Screws in top V-groove (located on stud centerlines)</p> | <p><b>3</b> Low voltage and 115 Vac wiring (may be in different location)</p> <p><b>4</b> Program switch panel (may be in different location)</p> |
|---|---|



### 13.7 Pull arm installation template, butt hinge

Fig. 13.7.1 Pull arm installation template



#### 13.7.1 Axle distance "A"

Bottom of header to door frame.

Axle extension		A
mm	Inches	
20 mm	25/32	1 3/16"
30 mm	1 3/16	1 9/16"
60 mm	2 3/8	2 3/4"

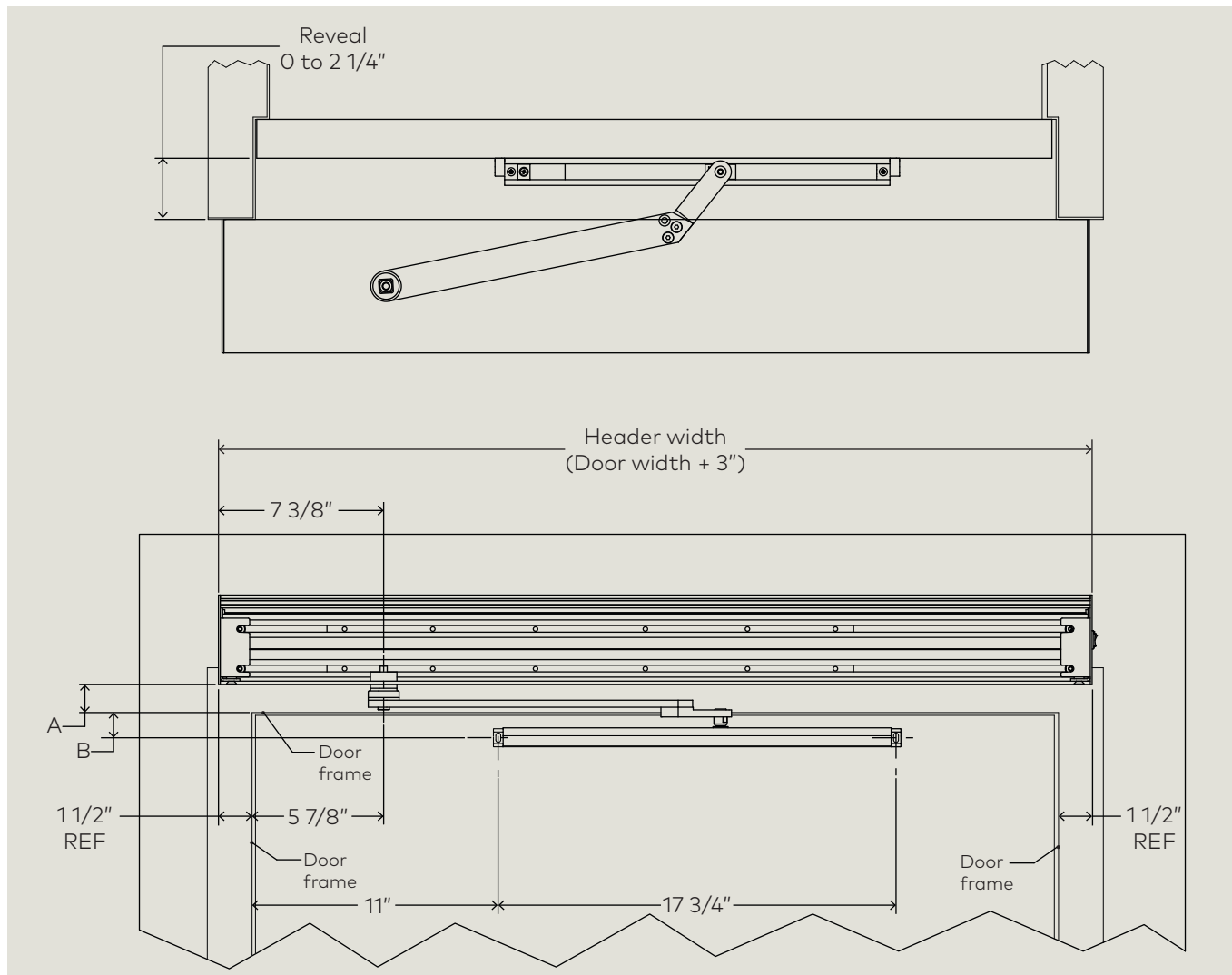
#### 13.7.2 Track height "B"

Track centerline to door frame.

Pivot pin length	B
1/2"	3/4"
1"	1 1/2"

## 13.8 Deep pull arm installation template, butt hinge

Fig. 13.8.1 Deep pull arm template



### 13.8.1 Axle distance "A"

Bottom of header to door frame.

Axle extension		A
mm	Inches	
20 mm	25/32	1 1/4"
30 mm	1 3/16	1 5/8"
60 mm	2 3/8	2 13/16"

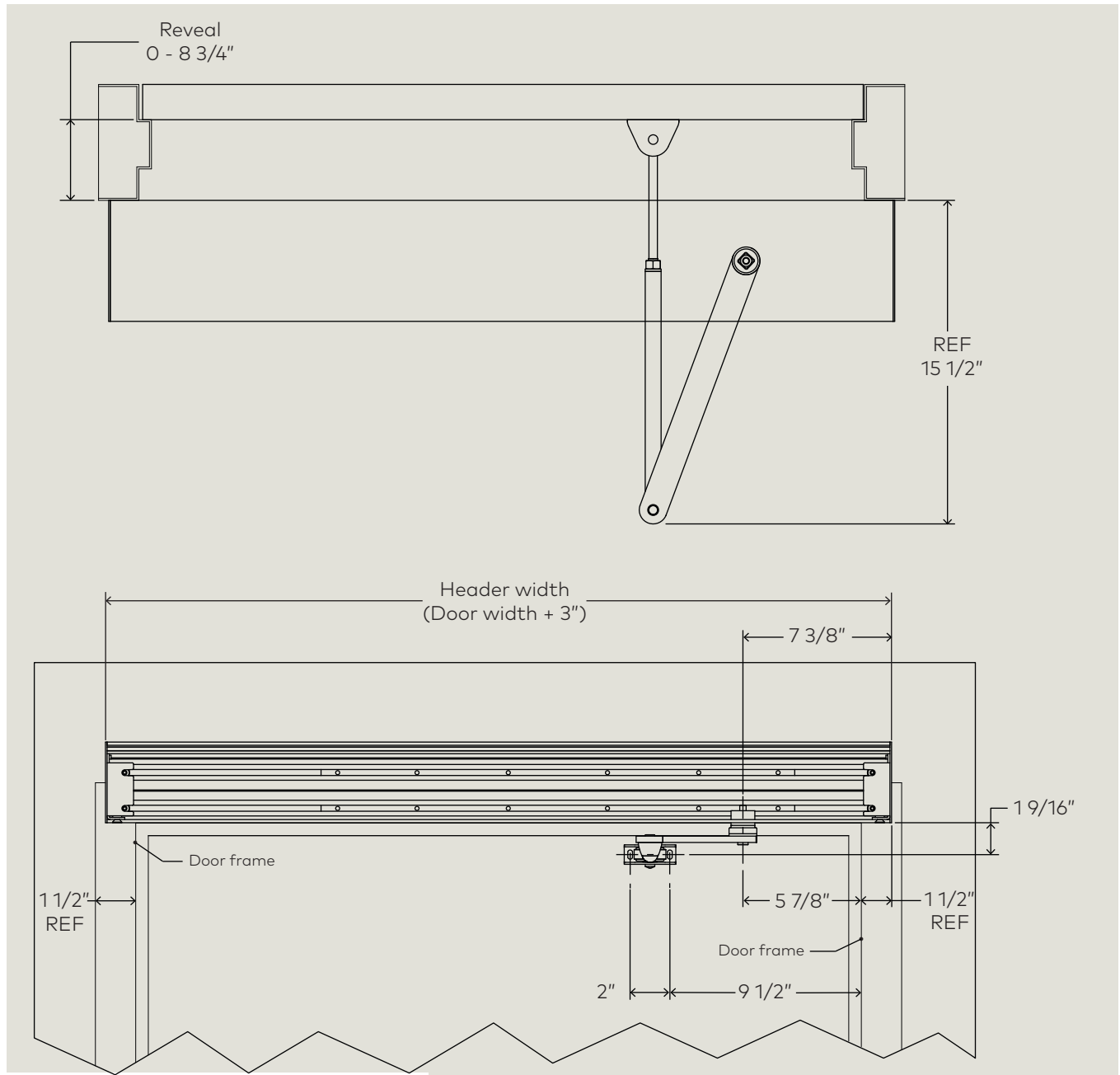
### 13.8.2 Track height "B"

Track centerline to door frame.

Pivot pin length	B
1/2"	1 1/8"
1"	1 5/8"

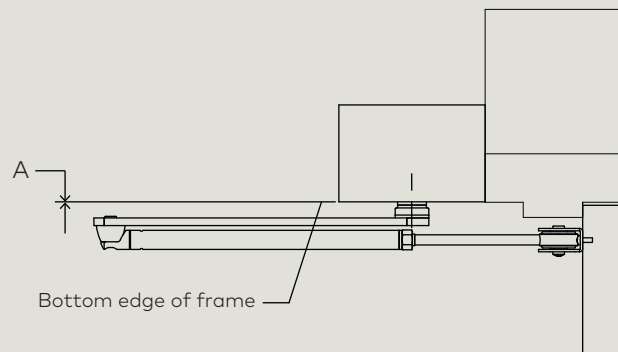
## 13.9 Push arm installation template, butt hinge

Fig. 13.9.1 Standard push arm template



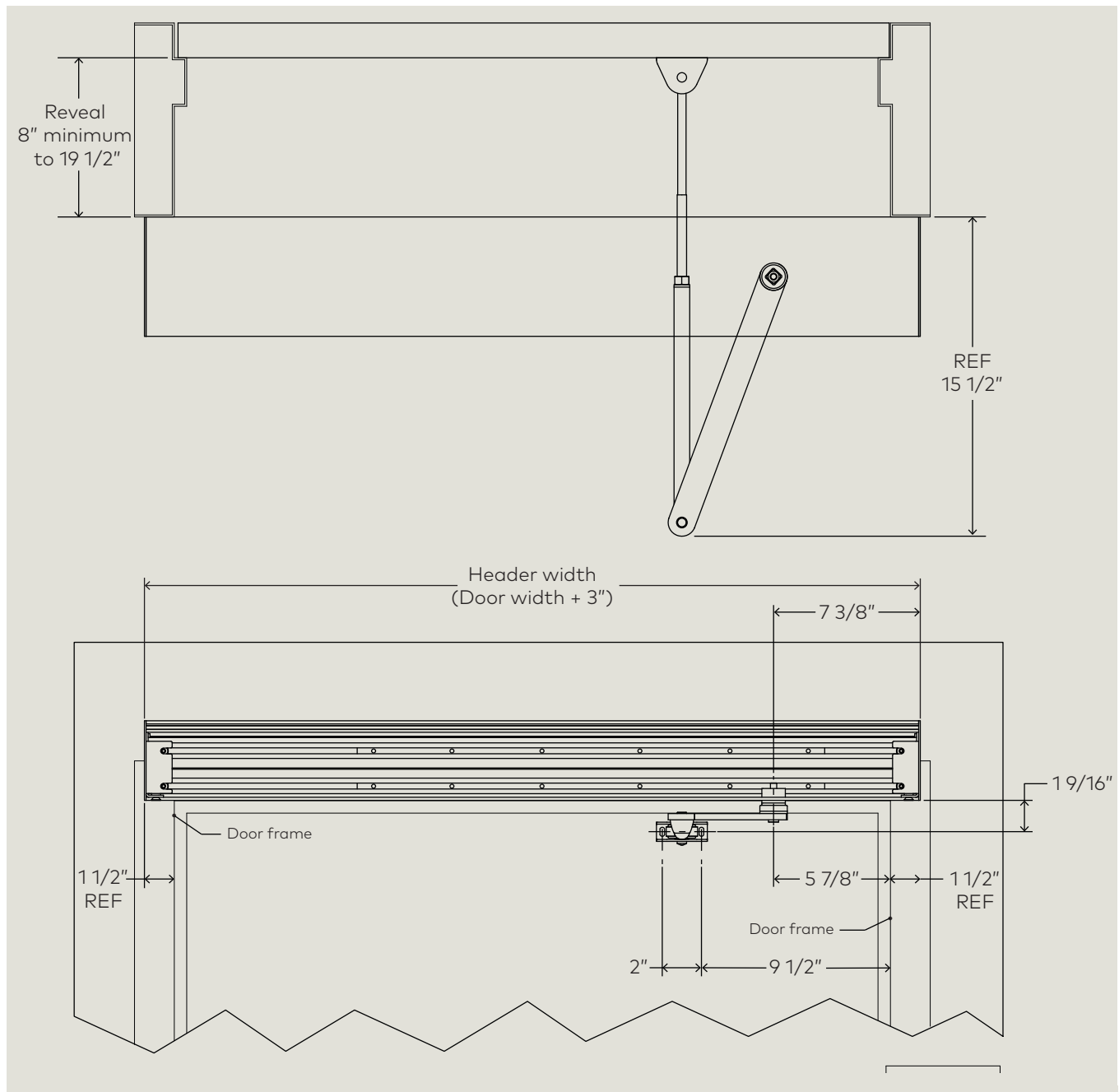
**13.9.1 Axle distance "A"**  
Bottom of header to door frame

Axle extension		A
20 mm	25/32"	0
30 mm	1 3/16"	7/16"
60 mm	2 3/8"	1 9/16"



## 13.10 Deep push arm installation template, butt hinge

Fig. 13.10.1 Deep push arm template



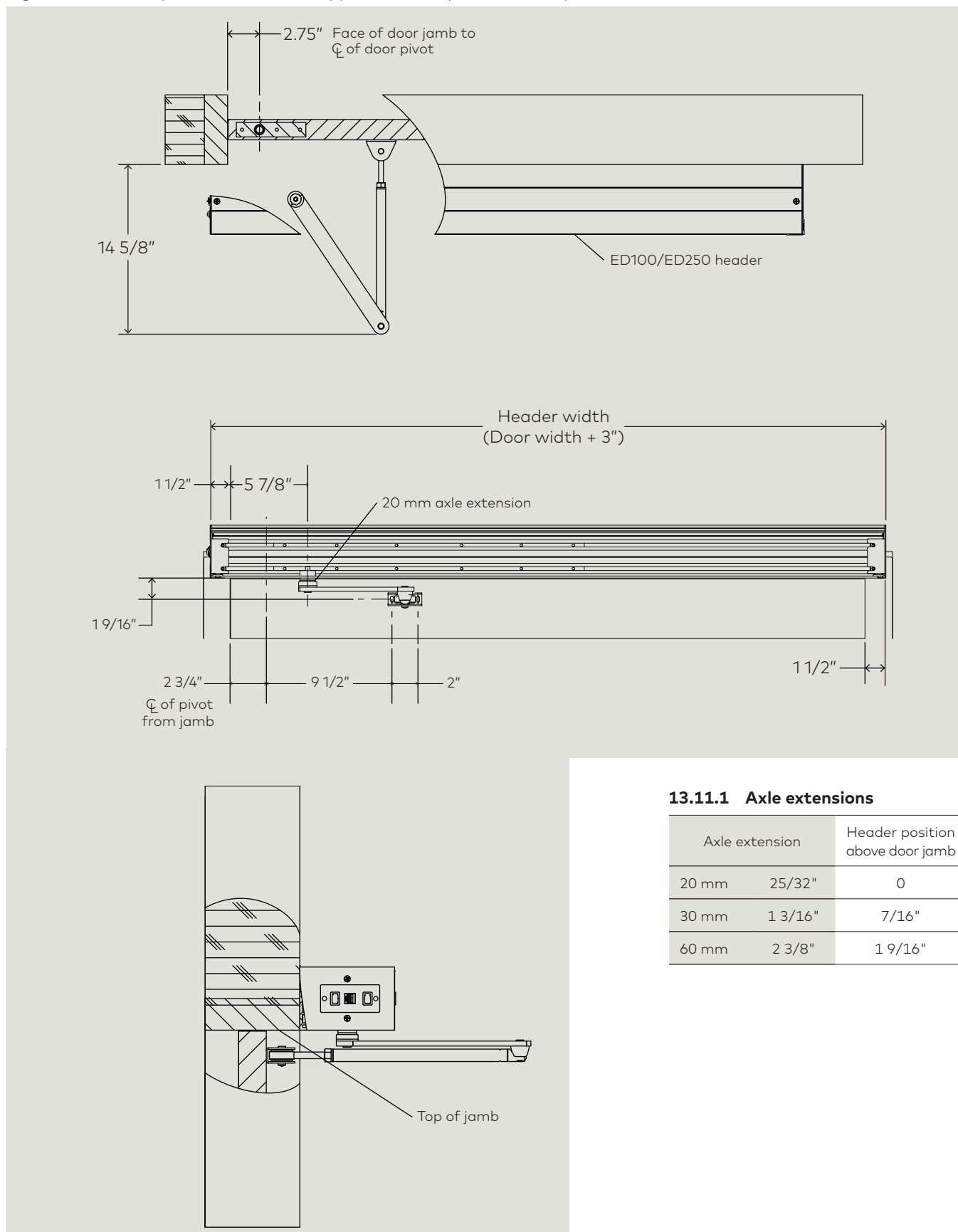
### 13.10.1 Axle distance "A"

Bottom of header to door frame

Axle extension		A
9 mm	5/16"	n/a
20 mm	25/32"	0
30 mm	1 3/16"	7/16"
60 mm	2 3/8"	1 9/16"

### 13.11 Center pivot door, surface applied header, push arm template

Fig. 13.11.1 Center pivot door, surface applied header, push arm template

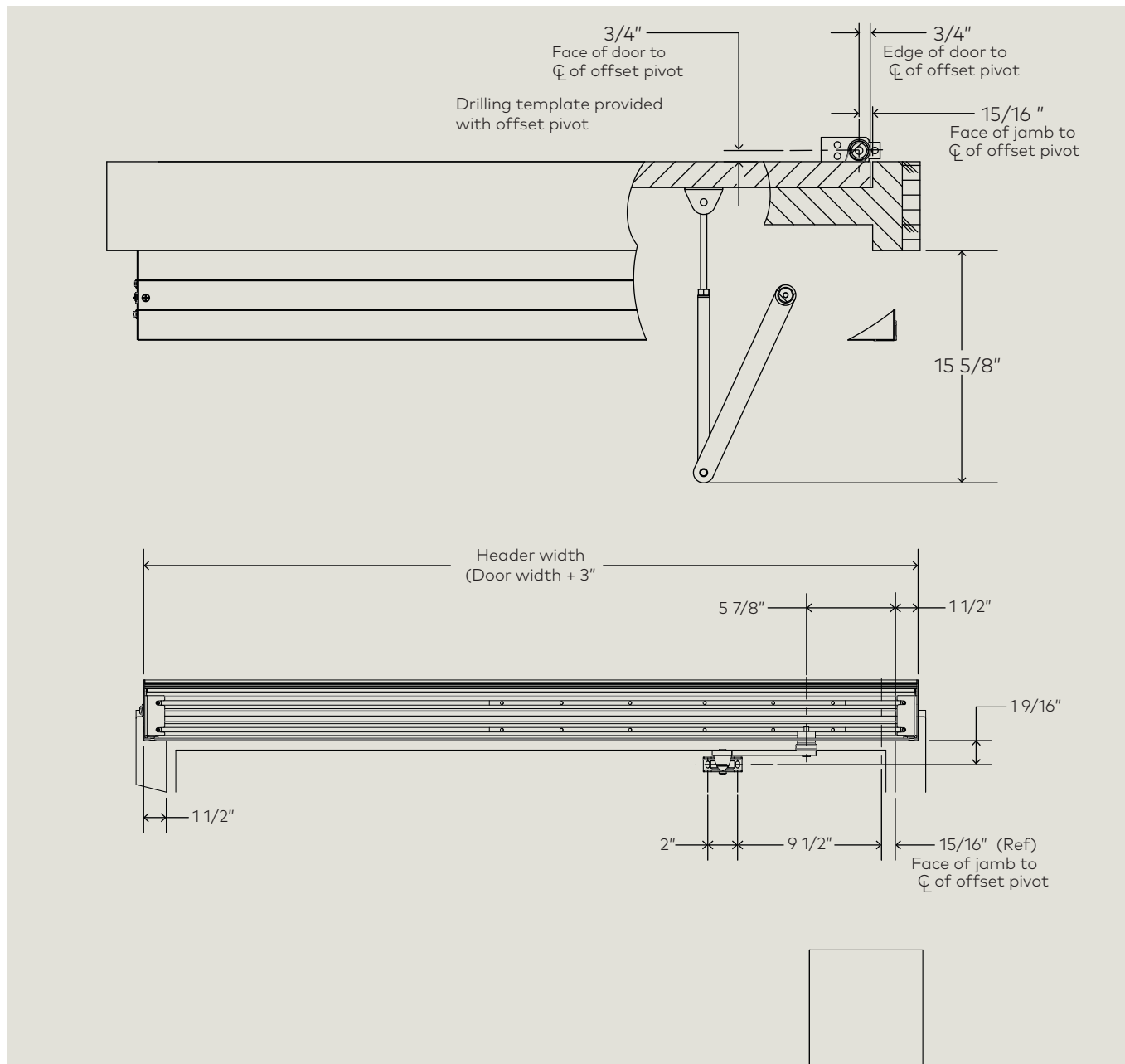


#### 13.11.1 Axle extensions

Axle extension	Header position above door jamb
20 mm	$25/32"$ 0
30 mm	$1\frac{3}{16}"$ $7/16"$
60 mm	$2\frac{3}{8}"$ $1\frac{9}{16}"$

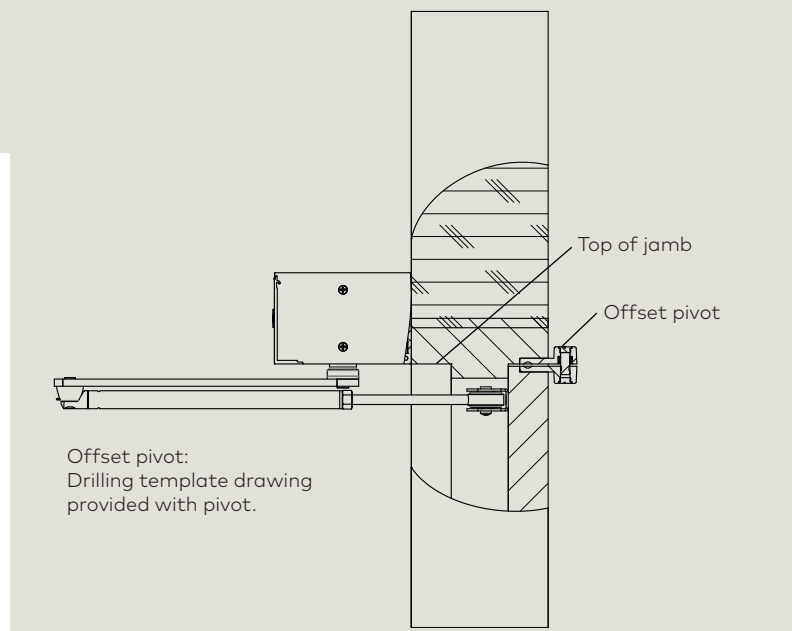
### 13.12 Offset pivot door, surface applied header, push arm template

Fig. 13.12.1 Offset pivot door, surface applied header, push arm template



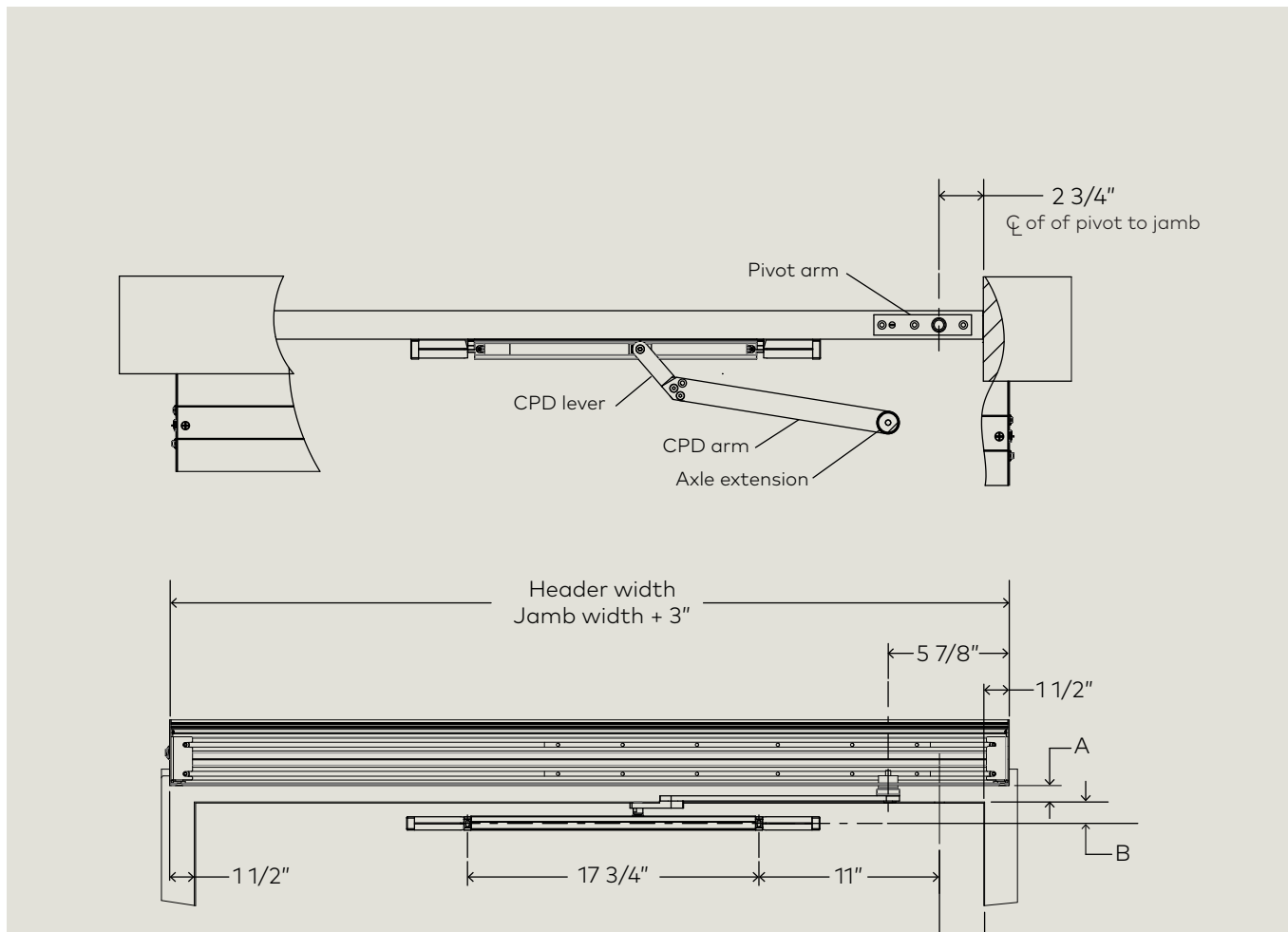
#### 13.12.1 Axle extensions

Axle extension		Header position above top of door jamb
20 mm	$25/32"$	0
30 mm	$1\ 3/16"$	$7/16"$
60 mm	$2\ 3/8"$	$1\ 9/16"$



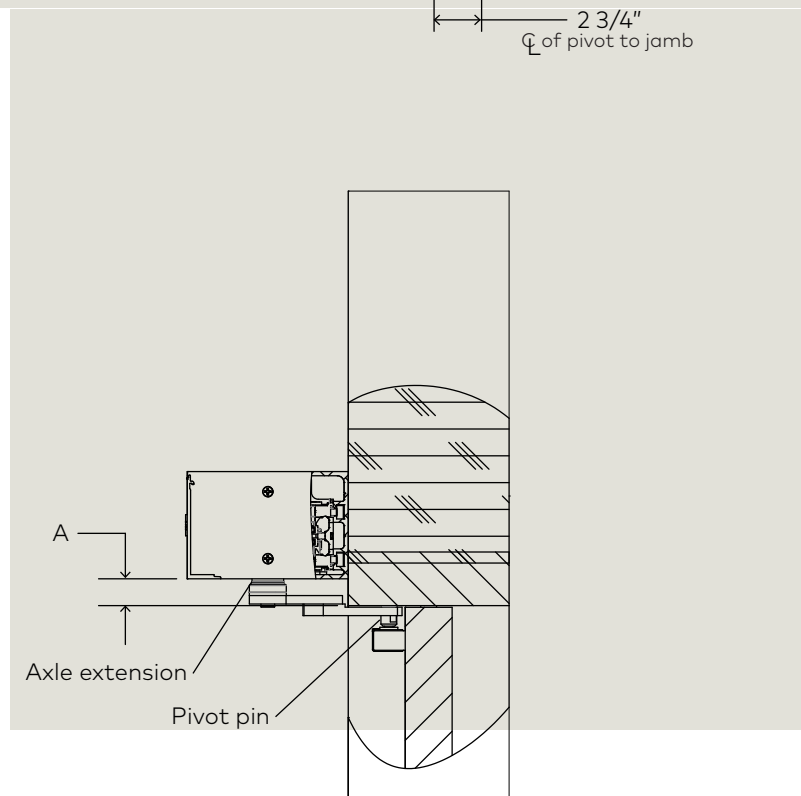
### 13.13 Center hung door, surface applied header, CPD pull arm template

Fig. 13.13.1 Center hung door, surface applied header, CPD pull arm template



#### 13.13.1 Axle extensions

Axle extension		A
20 mm	25/32"	1"
30 mm	1 3/16"	1 3/8"
60 mm	2 3/8"	2 9/16"
Pivot pin		B
	1/2"	1 5/16"
	1"	1 13/16"



# 14 ED50 operator installation

## 14.1 Single header mounting plate installation

- 4 Header track
- 9 Operator axle hole
- 12 Program switch panel

Fig. 14.1.1 Header with header tracks

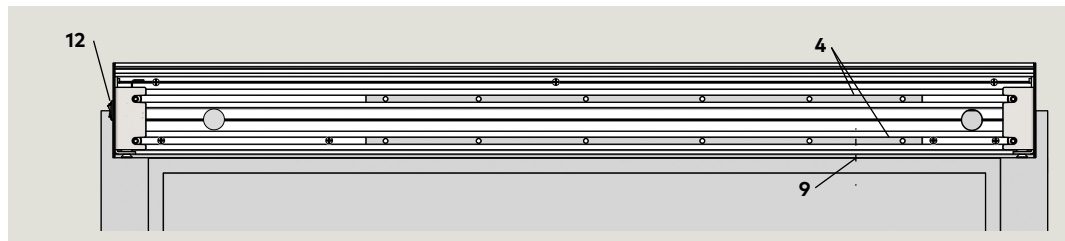


Fig. 14.1.2 Mounting plate

- 1 Mounting plate
- 2 1/4 x 20 UNC hole
- 3 115 Vac terminal block
- 11 1/4-20 x 1" PHFHS DK4617-010

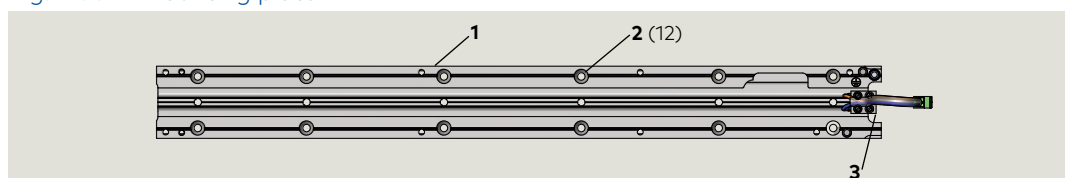


Fig. 14.1.3 Header with mounting plate installed

- 3 115 Vac terminal block
- 5 Guide pin
- 6 Third guide pin
- 9 Operator axle centerline

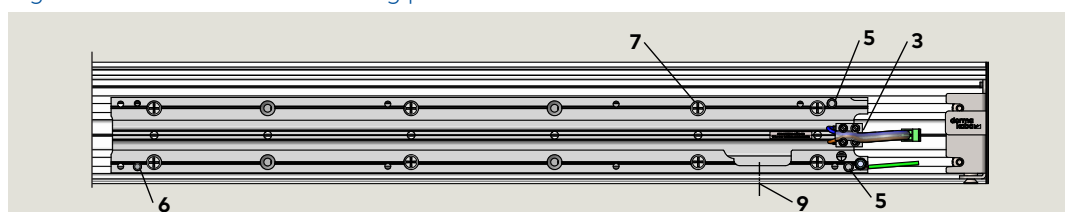


Fig. 14.1.4 Mounting plate location in header

- 1 Inside edge of jamb bracket
- 2 Edge of mounting base

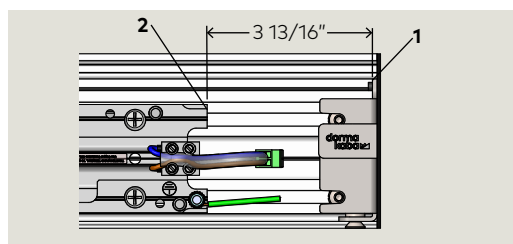


Fig. 14.1.5 1/4-20 x 1" PHFHS

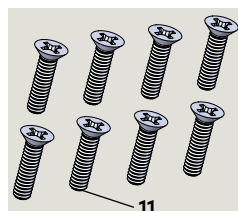
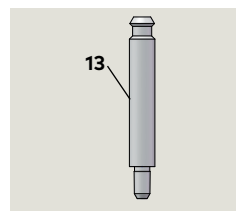


Fig. 14.1.6 Guide pin



### 14.1.1 Position header tracks.

1. Slide header tracks (7) to side of header with operator axle hole.

### 14.2.2 Fasten mounting plate to header tracks.

1. Place mounting plate on header tracks, aligning holes in header track with 1/4 x 20 UNC mounting plate holes.
2. Thread eight 1/4-20 x 1" PHFHS into mounting plate hole locations (Fig. 14.1.3). Do not tighten screws.

### 14.2.3 Fix location of mounting plate in and secure to header.

1. Slide mounting plate to dimension shown between inside edge of jamb bracket and edge of mounting plate (Fig. 14.1.4).
2. Tighten all eight screws using No. 3 Phillips screwdriver. Recheck dimension.

### 14.2.4 Install third guide pin.

1. Install third guide pin (6).

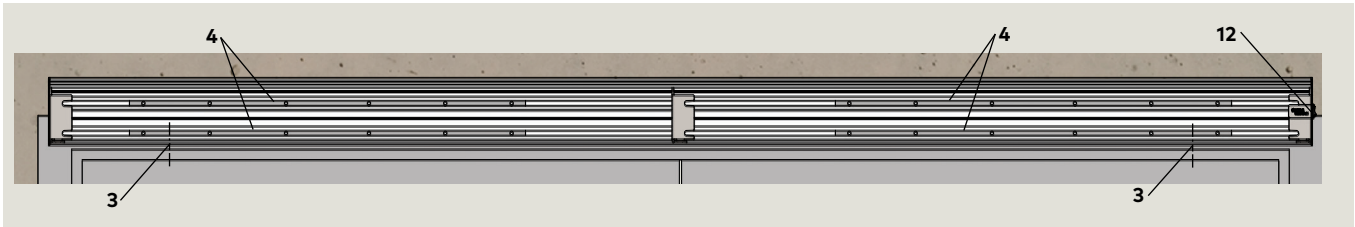
### CAUTION

Tighten screws to torque of



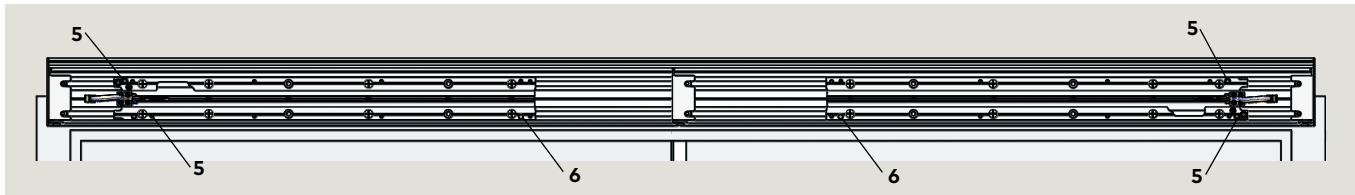
## 14.2 Double header mounting plate installation

Fig. 14.2.1 Double header with header tracks



- 3 Axle centerline
- 4 Header track
- 12 Program switch panel

Fig. 14.2.2 Double header with mounting plates installed



- 5 Guide pin
- 6 Third guide pin

- 8 115 Vac power cable  
DX3484-010, 5.8 ft.  
DX3484-020, 7.9 ft.  
DX3484-030, 11 ft..

Fig. 14.2.3 115 Vac power cable

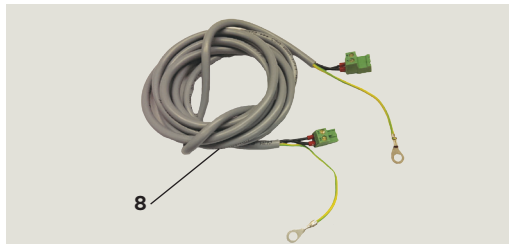
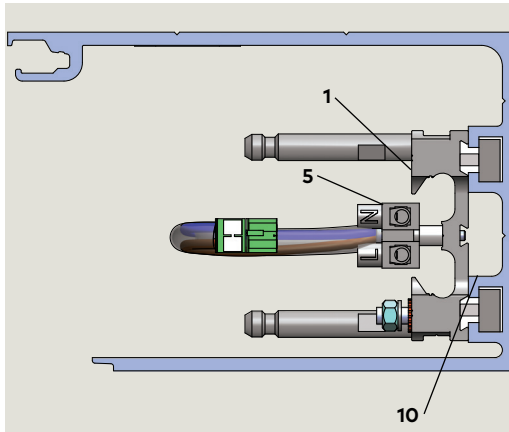


Fig. 14.2.4 Header and mounting plate wiring channels

- 1 Mounting plate channel
- 5 115 Vac terminal block
- 10 Header center channel



### 14.2.1 Install mounting plates in double header.

1. Refer to Para. 14, install mounting plates in header.

### 14.2.2 Install 115 Vac power cable.

1. Route 115 Vac power cable through both mounting plate channels.



#### TIPS AND RECOMMENDATIONS

Cable will connect 115 Vac between the two operators (Ref. Para. 14.6).

### 14.2.3 Install third guide pin.

1. Install third guide pin in each mounting plate (Fig. 14.2.2).



#### TIPS AND RECOMMENDATIONS

Use header center channel for low voltage wiring.

### 14.3 Customer 115 Vac connection to mounting plate terminal block

Fig. 14.3.1 Mounting plate power connection side

- 1 115 Vac terminal block
- 2 Ground terminal
- 3 Terminal block screw torque label
- 4 Preferred 115 Vac wiring entry point

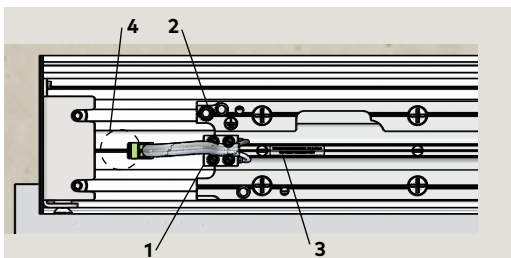


Fig. 14.3.2 115 VAC connections

- 1 115 VAC terminal block
- 2 Ground terminal
- 3 Mains terminal torque and wire label
- 5 M3.5 screw
- 6 115 Vac plug to operator
- L 115 Vac
- N Neutral
- G Ground

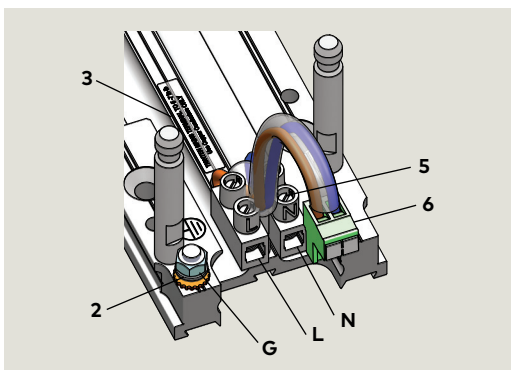


Fig. 14.3.3 Mains terminal torque and wire label

TIGHTEN MAINS TERMINAL TO 5-7 in-lb  
Use Copper Conductors ONLY



**TIPS AND RECOMMENDATIONS**

Install label in header with panelboard and circuit breaker number.

**14.3.1 Connect 115 Vac wiring**



**WARNING**

Routing and connection of 115 Vac wiring to ED50 must be performed by a qualified person!



**WARNING**

115 Vac branch circuit disconnect or circuit breaker must be OFF!

1. Route wiring into header, use appropriate fitting to secure conduit or wiring to header, and route wiring to 115 Vac terminal block.

**CAUTION**

Use copper conductors only!

2. Terminate 115 Vac wiring at terminal block.



**TIPS AND RECOMMENDATIONS**

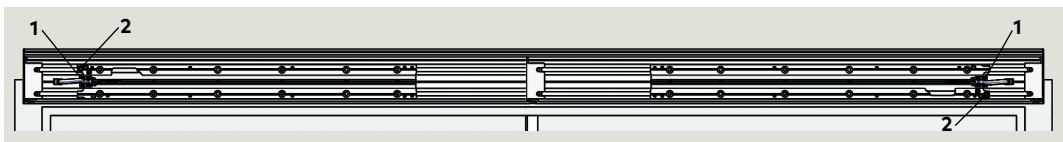
- Maximum wire strip length, 1/4".
- Tighten terminal screws to torque referenced in Fig. 14.3.3.
- Leave service loop in wiring at terminal block for maintenance.

3. Terminate ground wire at ground terminal. Remove nut and washer on ground terminal, bend ground wire around terminal, replace washer and nut and tighten. Leave service loop in ground wire.
  - Use 5/16" [8 mm] socket for nut.

### 14.4 Double door header 115 Vac mounting plate connection

Fig. 14.4.1 Double door header 115 Vac connection

- 1 115 Vac terminal block
- 2 Ground stud



**NOTICE**

115 Vac power cable connects the two operators together (Para. 14.6).

**14.4.1 115 VAC connection to double door header.**

1. Customer 115 Vac connects to either mounting plate 115 Vac terminal block and ground stud.

## 14.4 Remove protective film strips from operator

1 Protective film strip

Fig. 14.4.1 Operator protective film strips

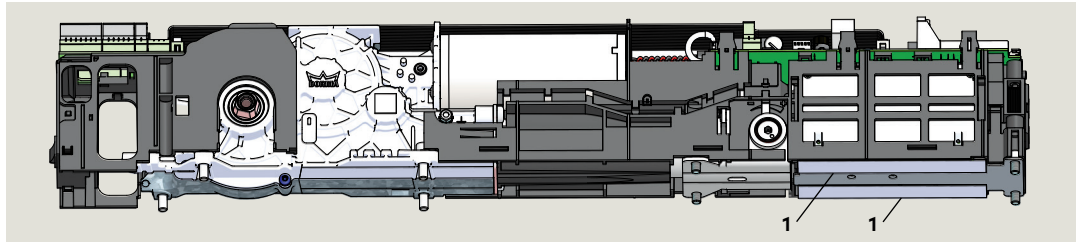


Fig. 14.4.2 Protective film strip

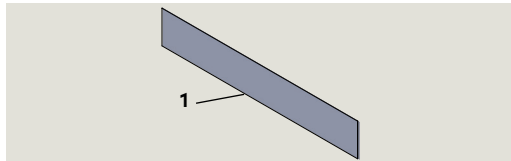
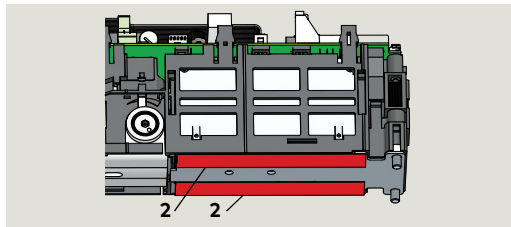


Fig. 14.4.3 Heat conductive pads

2 Heat conductive pad



### 14.4.1 Remove protective film strips.

1. Remove two protective film strips from operator heat conductive pads.

**CAUTION**

Heat conductive pads must remain clean once protective film strips are removed!

## 14.5 Install ED50 operator on mounting plate in header

Fig. 14.5.1 Header with mounting plate installed

- 3 Guide pin
- 4 Mounting plate
- 5 115 VAC plug
- 6 M6 x 10 SHCS
- 7 mounting hole
- 8 Program switch

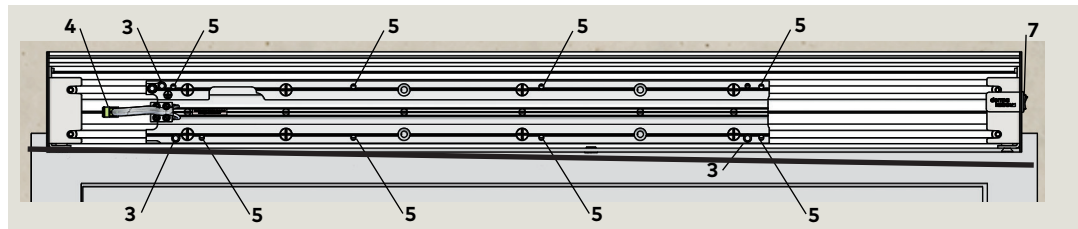


Fig. 14.5.2 Installing operator on mounting plate

- 1 M6 x 10 SHCS
- 2 Operator housing
- 3 Guide pin
- 4 Mounting plate
- 5 115 Vac plug
- 6 M6 x 10 SHCS
- 7 mounting hole
- 8 115 Vac terminal block

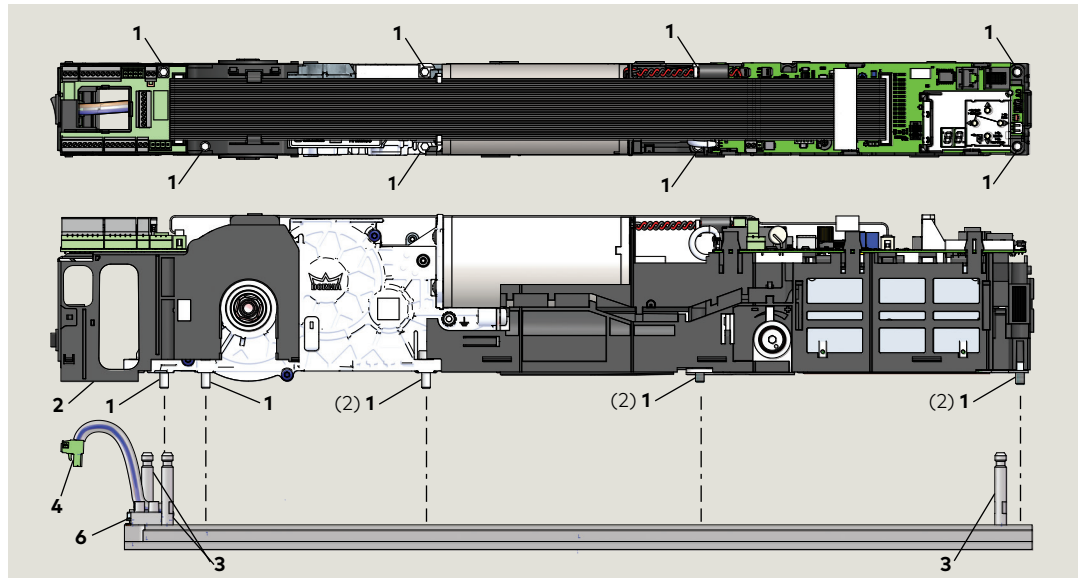
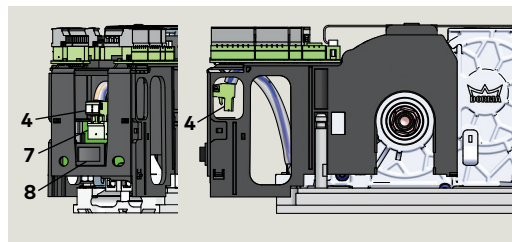


Fig. 14.5.3 115 VAC plug connection

- 4 Mounting plate
- 5 115 Vac plug
- 7 Operator 115 Vac socket
- 8 Power on switch



### 14.5.1 Install operator on mounting plate.

1. Place operator over the three mounting plate guide pins.
2. Move operator in toward mounting plate, guiding all wiring into operator housing.
3. Once operator is placed flush against mounting plate, use a 5 mm T handle hex key to thread eight M6x10 SHCS into mounting plate.
4. Tighten all eight SHCSs. Refer to Chapter 7 for torque value.
5. Insert 115 Vac mounting plate plug into operator 115 Vac socket.

#### NOTICE

Customer 115 Vac wiring (Para. 14.3) not shown for clarity.

Fig. 14.5.4 Operator and mounting plate assembly

- 2 Operator housing
- 3 Guide pin
- 4 Mounting plate
- 5 115 Vac plug
- 8 Power switch

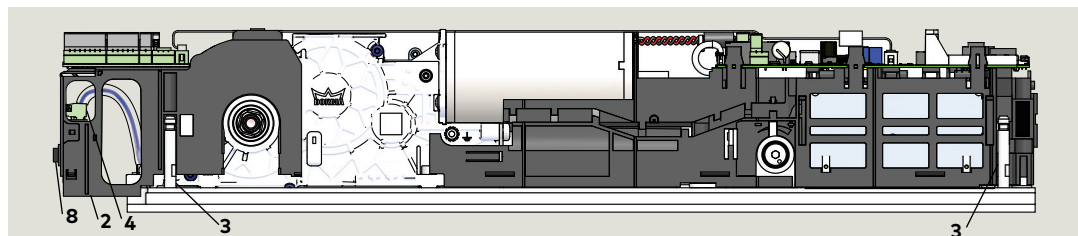


Fig. 14.5.5 Header with operator installed



## 14.6 Double header ED50 operator installation

Fig. 14.6.1 Double header with operators installed

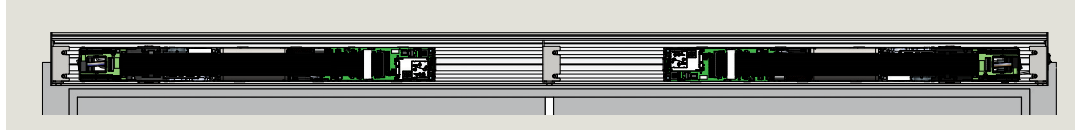


Fig. 14.6.2 115 Vac power cable installed on operator with 115 Vac customer connection

- 1 Power switch
- 2 Power cable 115 Vac plug
- 3 115 Vac cable to terminal block
- 4 Power cable ground wire and ring terminal
- 5 Customer 115 Vac power
- 6 Power switch board
- 7 Ground stud nut

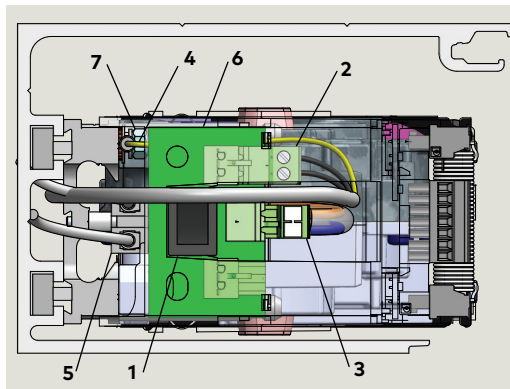
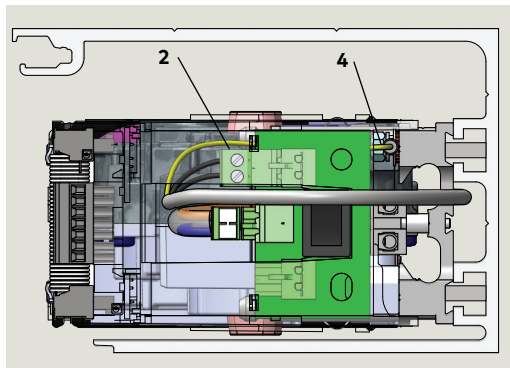
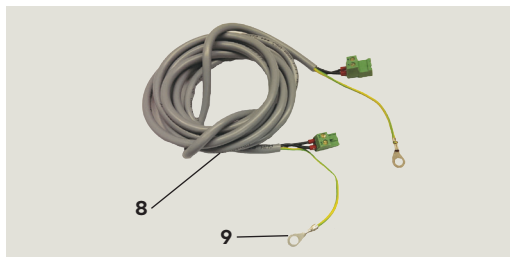


Fig. 14.6.3 115 VAC power cable installed on second operator



- 8 115 Vac power cable DX3484-0x0
- 9 Ground wire ring terminal

Fig. 14.6.4 115 VAC power cable



### 14.6.1 Install operators on mounting plates.

1. Refer to Para. 14.5 for installation of ED50 operators.

### 14.6.2 Connect 115 Vac power cable to both operators.

Refer to Para. 14.2.1 for installation of power cable in mounting plates.

1. Insert power cable 115 Vac plug into socket on power switch board.
  - Remove ground stud nut ( 5/16" [8 mm] socket) and washer.
2. Insert power cable ground wire ring terminal on ground stud.
3. Replace washer, install ground stud nut and tighten.



### TIPS AND RECOMMENDATIONS

Customer 115 Vac power connection may be on opposite operator.

## 14.7 Connect cables to ED50 operator

- 1 Program switch panel
- 3 Header for program switch cable
- 5 COM 1 service connector

Fig. 14.7.1 Header with ED100/ED250 operator



Fig. 14.7.2 Cable installation on operator

- 1 Program switch panel
- 2 Program switch cable with connector 36" long
- 3 Header for program switch cable
- 4 RJ 45 connector, double door synchronization
- 5 COM 1 service connector
- 6 RJ 45 connector for program switch panel cable

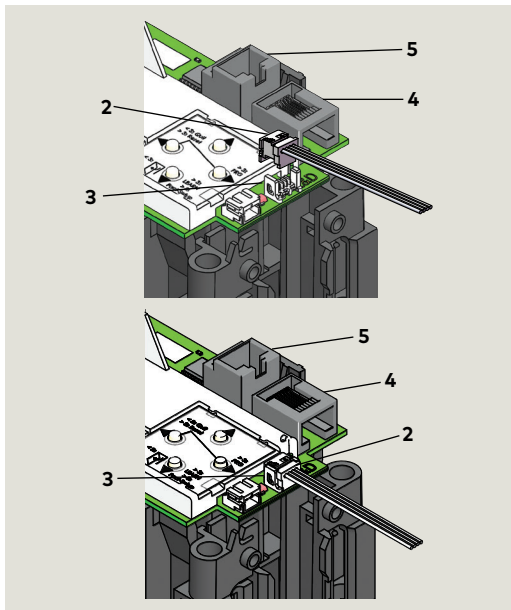


Fig. 14.7.4 RJ45 comm cable

- 6 RJ45 comm cable, 36" long DX4607

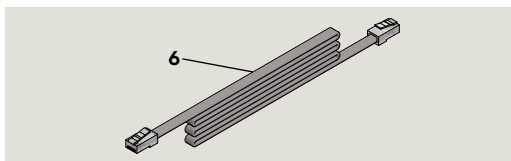
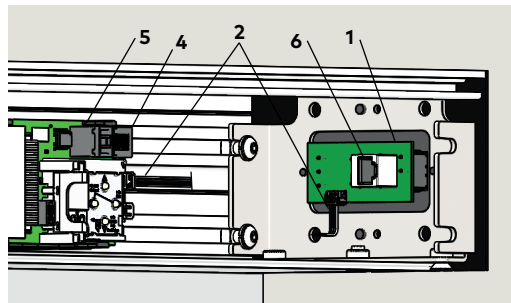


Fig. 14.7.3 Program switch panel



### 14.7.1 Connect program switch cable to operator

1. Carefully insert cable connector into header connector on operator.
  - Note that connector inserts vertically into header connector.

### 14.7.2 Install RJ45 program switch comm cable

1. Connect one end of cable to program switch panel RJ45 connector.
2. Connect other end of cable to COM 1 service connector on operator.

## 14.8 Double header operator legend plate

- 1 Program switch panel
- 3 Header for program switch cable
- 5 COM 1 connector
- 7 User interface legend plate

Fig. 14.8.1 Double header with operators installed

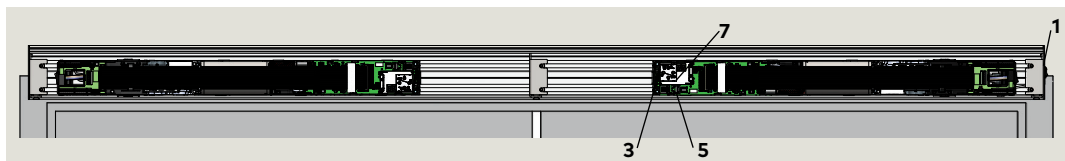
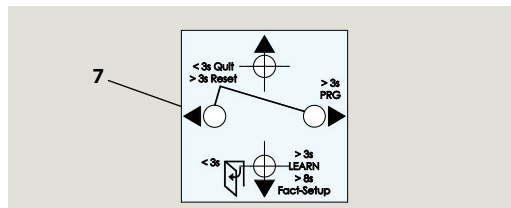


Fig. 14.8.2 Operator legend plate



### 14.8.1 Reverse legend plate orientation.

1. Remove and reverse orientation of legend plate on RH operator so that letters face upward.
2. Reinstall legend plate.

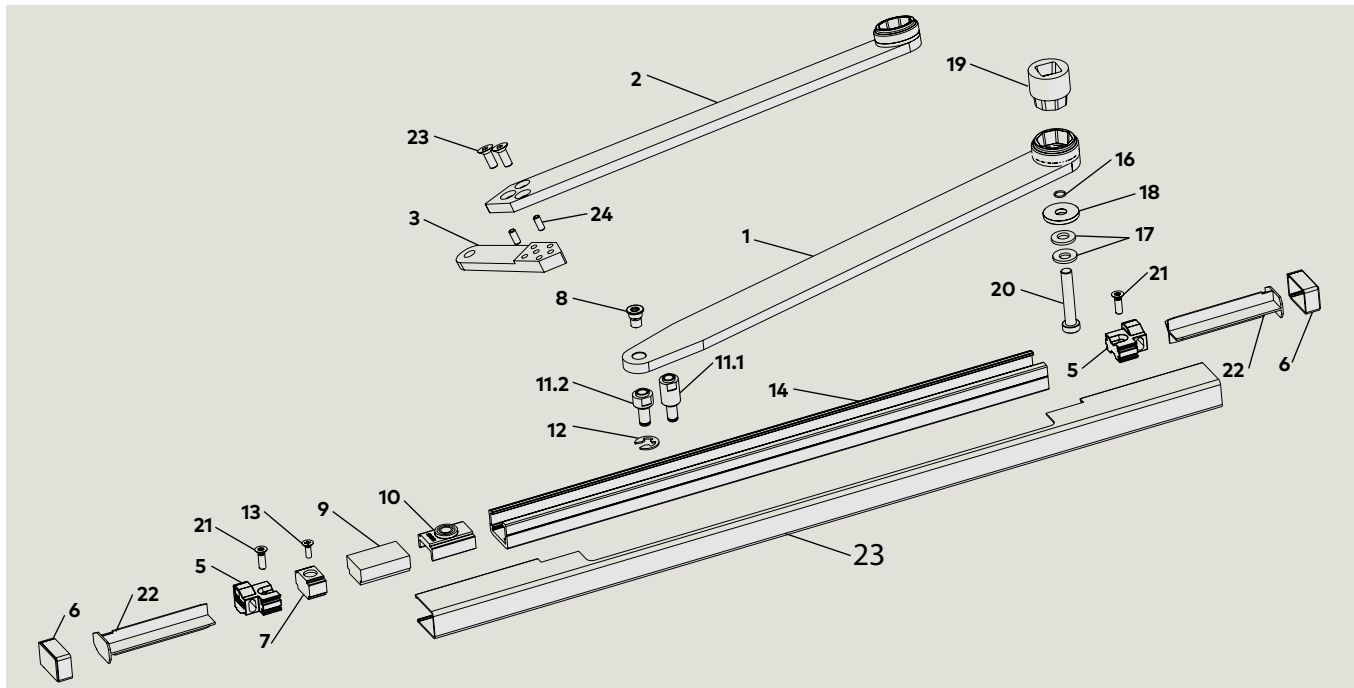
# 15 Pull arm installation

## 15.1 Hardware

### 15.1.1 Hardware

Hardware is shipped in separate bag for assembly based on hand of door.

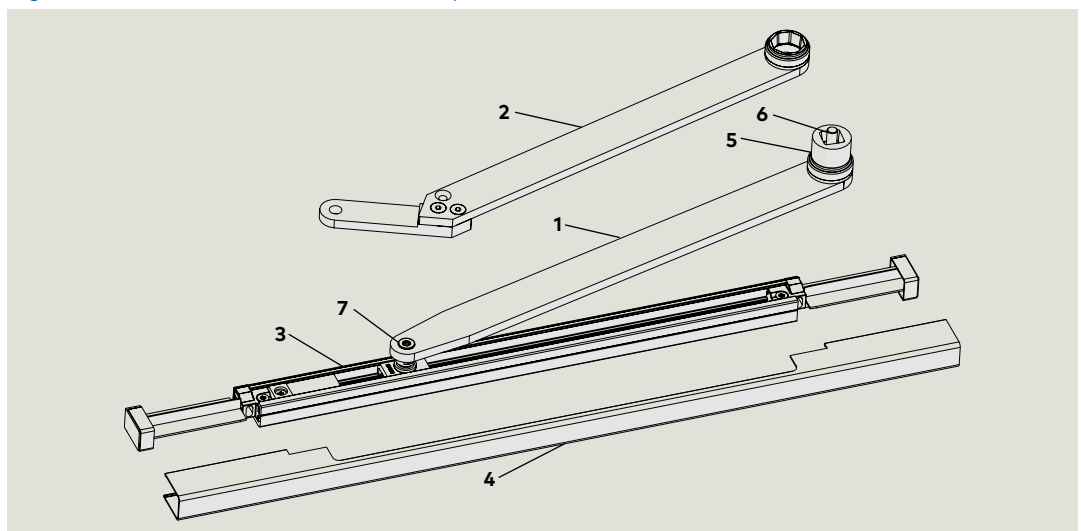
Fig. 15.1.1 Pull arm and track assembly hardware



- |                              |                                 |                     |                               |                 |
|------------------------------|---------------------------------|---------------------|-------------------------------|-----------------|
| 1 Standard pull arm          | 6 End cap                       | 11.1 1" pivot pin   | 17 Conical spring             | 22 Spacer block |
| 2 Pull arm for CPD extension | 7 End stop                      | 11.2 1/2" pivot pin | 18 Flat washer                | 23 Cover        |
| 3 CPD extension lever        | 8 Limit arm screw M8-1 x 0.587" | 12 Retaining ring   | 19 Axle extension (Chapter 5) | 24 Guide pin    |
| 4 Screw, M6 x 10.9           | 9 Buffer DF0113-010             | 13 Screw, M4 x 12   | 20 Screw, M8 x 1 custom       |                 |
| 5 Fixing piece               | 10 Slide shoe                   | 14 Track            | 21 Screw, M5 x 16             |                 |
|                              |                                 | 15 Spacer, 5 x 12   |                               |                 |
|                              |                                 | 16 O ring           |                               |                 |

Fig. 15.1.2 Pull arm and track assembly

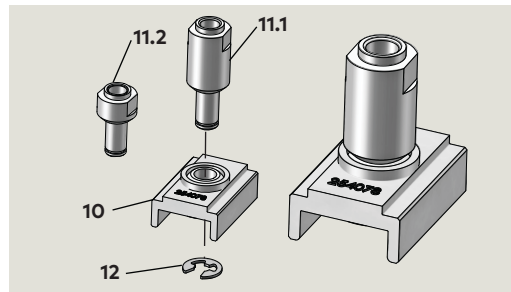
- |                                  |
|----------------------------------|
| 1 Standard pull arm              |
| 2 Pull arm with CPD lever        |
| 3 Track assembly                 |
| 4 Track cover                    |
| 5 Arm Extension                  |
| 6 M8 screw (custom) and hardware |
| 7 M8 screw, pivot pin            |



## 15.2 Track assembly

- 10 Slide shoe
- 11.1 1" pivot pin
- 11.2 1/2" pivot pin
- 12 Retaining ring

Fig. 15.2.1 Slide shoe and pivot pin



### 15.2.1 Slide shoe assembly

1. Insert selected pivot pin into slide shoe and secure with retaining ring.

- 3 Spacer
- 4 Fixing piece
- 5 Screw, M8 x 1 thread, 0.201 hex head
- 6 End cap
- 7 End stop
- 8 M5 shoulder screw, for pivot pin
- 9 Buffer
- 10 Slide shoe
- 11.1 1" pivot pin
- 11.2 1/2" pivot pin
- 12 Retaining ring
- 13 M4 x 12 countersunk FH cross recess screw
- 14 Track
- 22
- 23 Operator axle centerline

Fig. 15.2.1 Track assembly, door hinge side left of track

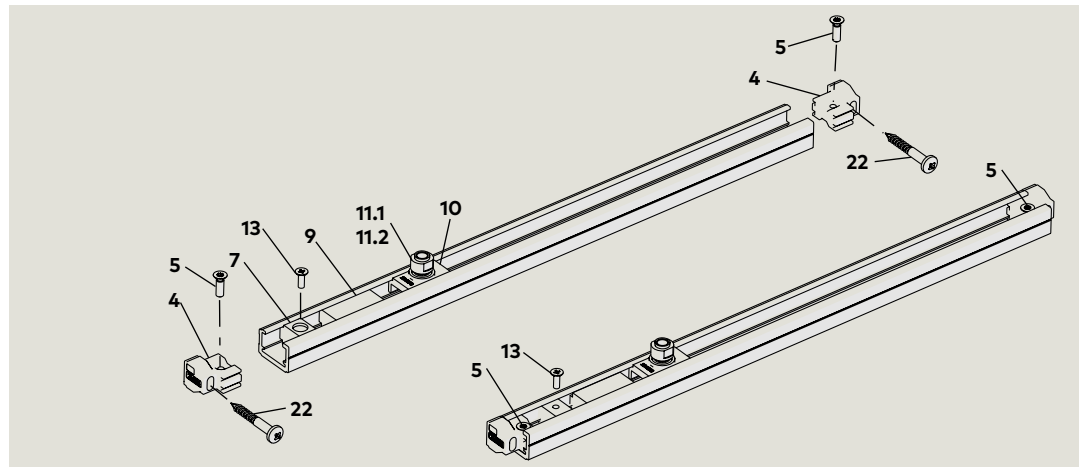
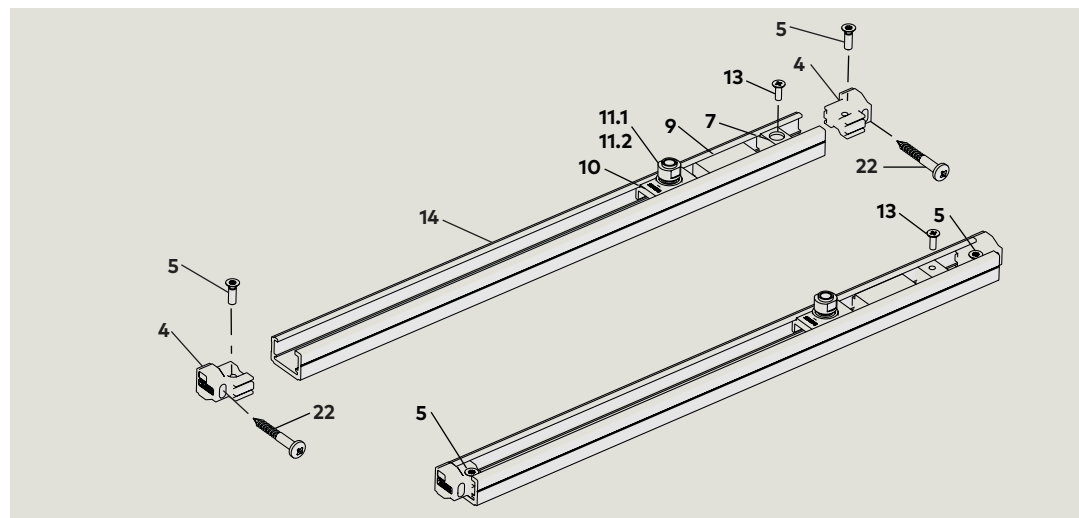


Fig. 15.2.2 Track assembly, door hinge side right of track



### 15.2.2 Track assembly

**CAUTION**

Hardware must be assembled in track based on hand of door.

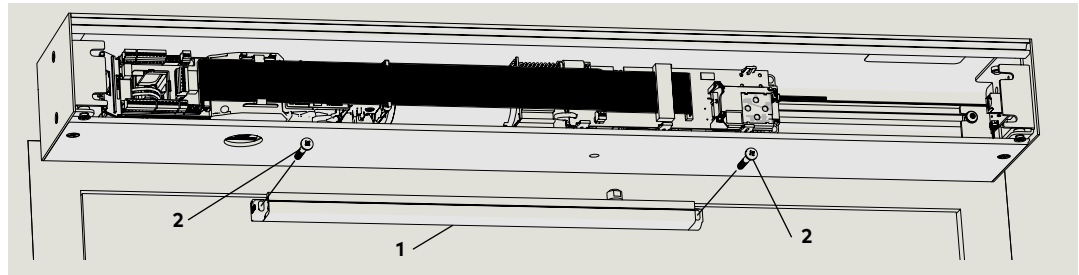
1. Assemble hardware in track. Installation order and position of end stop (7) and buffer (9) based on hand of door.
2. Secure two fixing pieces to end of track with M4 x 12 screws (5). Use No. 2 Phillips, do not overtighten.
3. Thread M4 x 12 screw (13) into end stop but do not tighten.



## 15.3 Install track and pull arm assembly

- 1 Track assembly
- 2 Screw or fastener

Fig. 15.3.1 Pull arm track installation on door



### 15.3.1 Mount track assembly on door.

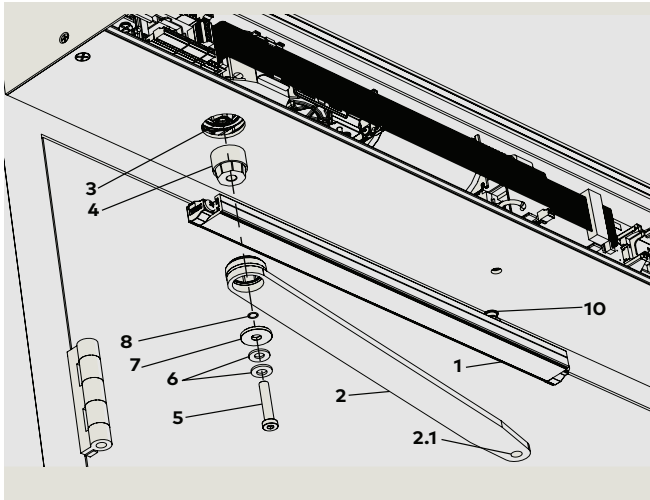
1. Use applicable template (Para. 13.2, 13.3) to locate two mounting holes on door.
2. Drill holes in door, hole size based on selected screw or fastener (Ref. Chapter 6, Accessory kits).

3. Mount track to door and fasten.

#### CAUTION

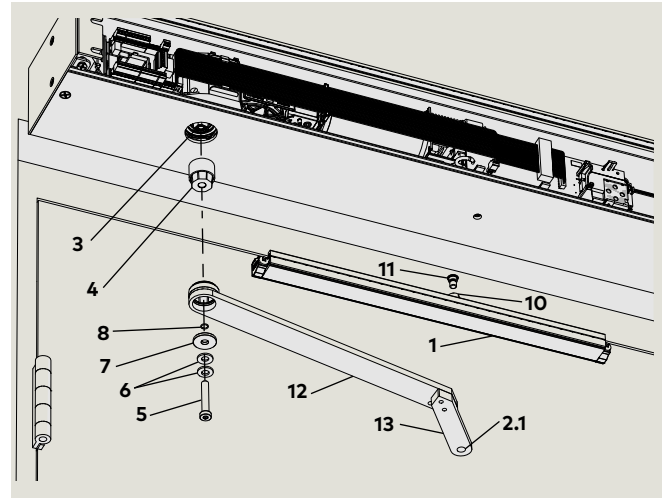
Insure track hardware is assembled for hand of door.

Fig. 15.3.2 Pull arm installation



- |                              |                              |                    |
|------------------------------|------------------------------|--------------------|
| 1 Track assembly             | 3 Operator drive axle        | 7 Flat washer      |
| 2 Arm                        | 4 Axle extension (Chapter 5) | 8 O ring           |
| 2.1 Arm pivot pin screw hole | 5 M8 SHCS (custom)           | 10 Pivot pin       |
|                              | 6 Conical spring             | 11 M8 x .587 screw |

Fig. 15.3.3 CPD pull arm installation



- |              |
|--------------|
| 12 CPD arm   |
| 13 CPD lever |

### 15.3.2 Install pull arm and axle extension.

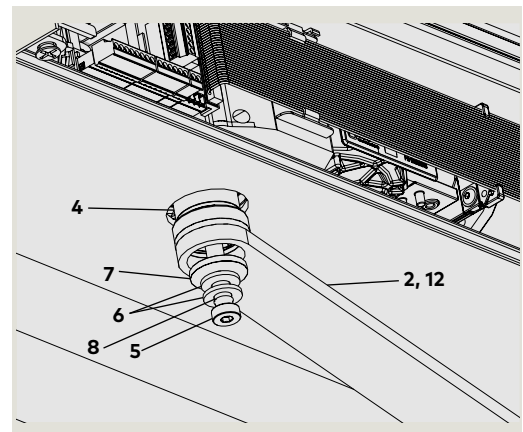
1. Door must be closed.
2. Assemble hardware on M8 SHCS.
3. Position arm so that arm pivot pin hole is above pivot pin, place axle extension in pull arm and insert extension into operator drive axle.
4. Thread M8 SHCS into operator axle.



#### TIPS AND RECOMMENDATIONS

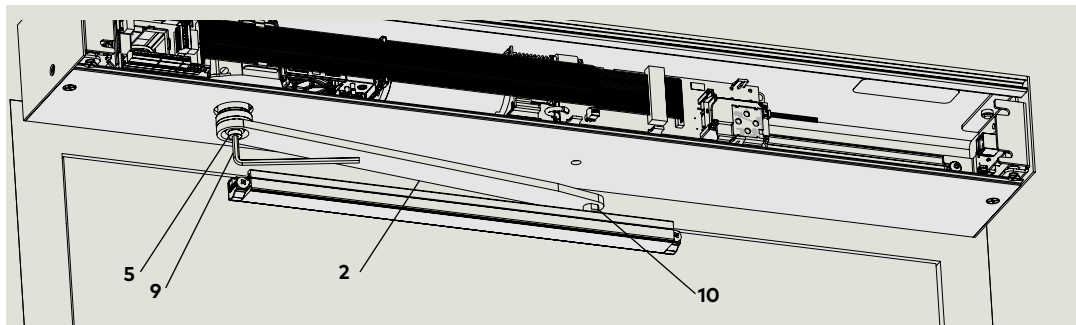
CPD arm and lever must be assembled, Ref. Para. 15.3.5.

Fig. 15.3.4 M8 SHCS assembly into axle



- 2 Standard pull arm
- 5 M8 SHCS (custom)
- 9 5 mm hex key
- 10 Pivot pin

Fig. 15.3.3 Arm M8 SHCS



**15.3.3 Tighten M8 screw.**

1. Tighten M8 SHCS into operator axle with 5 mm hex key.

**CAUTION**

Torque wrench with 5 mm hex key socket must be used to tighten M8 SHCS to 26 ft-lb.

**CAUTION**

Insure washers are seated properly as M8 SHCS is tightened!

Fig. 15.3.4 Torque wrench, 5 mm hex key

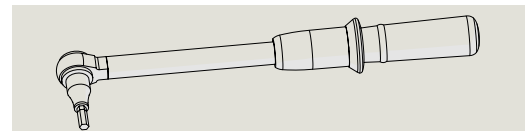
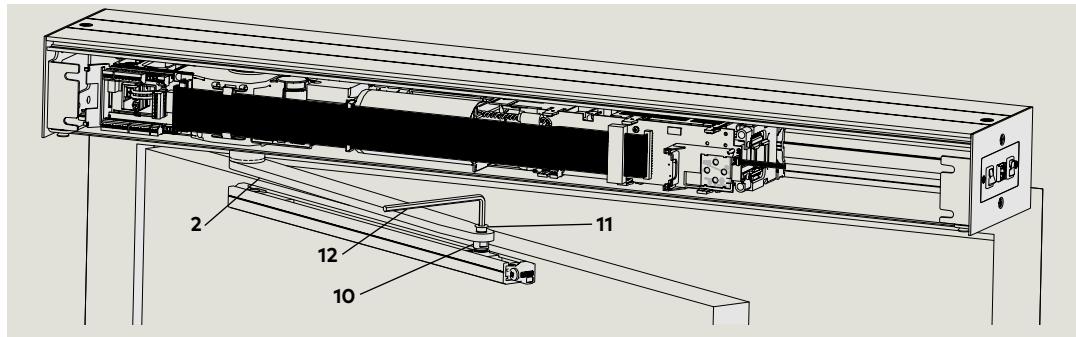


Fig. 15.3.5 Fasten arm to pivot pin

- 2 Pull arm
- 10 Pivot pin
- 11 M8 x .587 screw

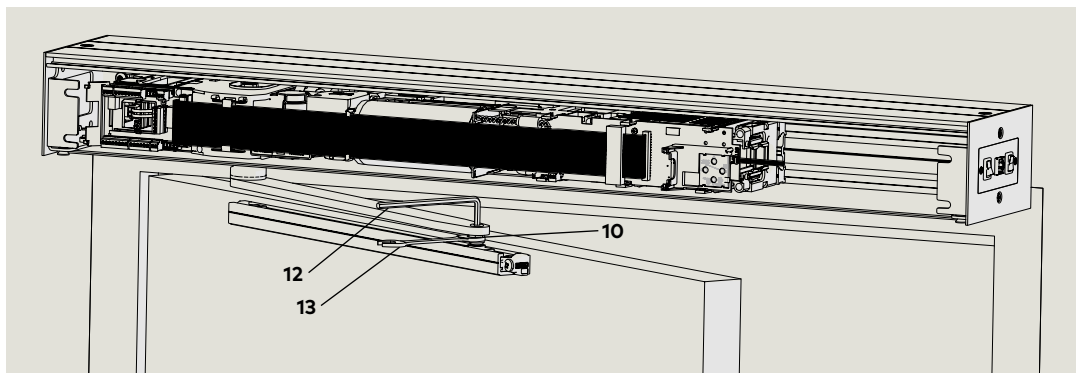


**15.3.4 Fasten arm to pivot pin.**

1. Move end of arm on top of pivot pin.
2. Thread M8 screw into pivot pin using a 5 mm hex key.

Fig. 15.3.6 Tighten M8 screw

- 2 Pull arm
- 10 Pivot pin
- 11 M8 x .587 screw
- 12 5 mm hex key
- 13 13 mm open end wrench



**15.3.5 Tighten M8 screw**

1. Holding pivot pin with 13 mm open end wrench, tighten M8 screw using a 5 mm hex key. Complete tightening using torque wrench.

**CAUTION**

Torque wrench with 5 mm hex key socket must be used to tighten M8 screw to 26 ft-lb.

**15.3.6 CPD arm assembly**

1. Assemble CPD arm hardware according to hand of door.
2. Tighten M6 screws using a 5 mm hex key.

Fig. 15.3.7 Hinge side, LH pull

- 1 CPD arm
- 2 CPD lever
- 3 M6x16-10.9 FHSCS
- 4 Guide pin

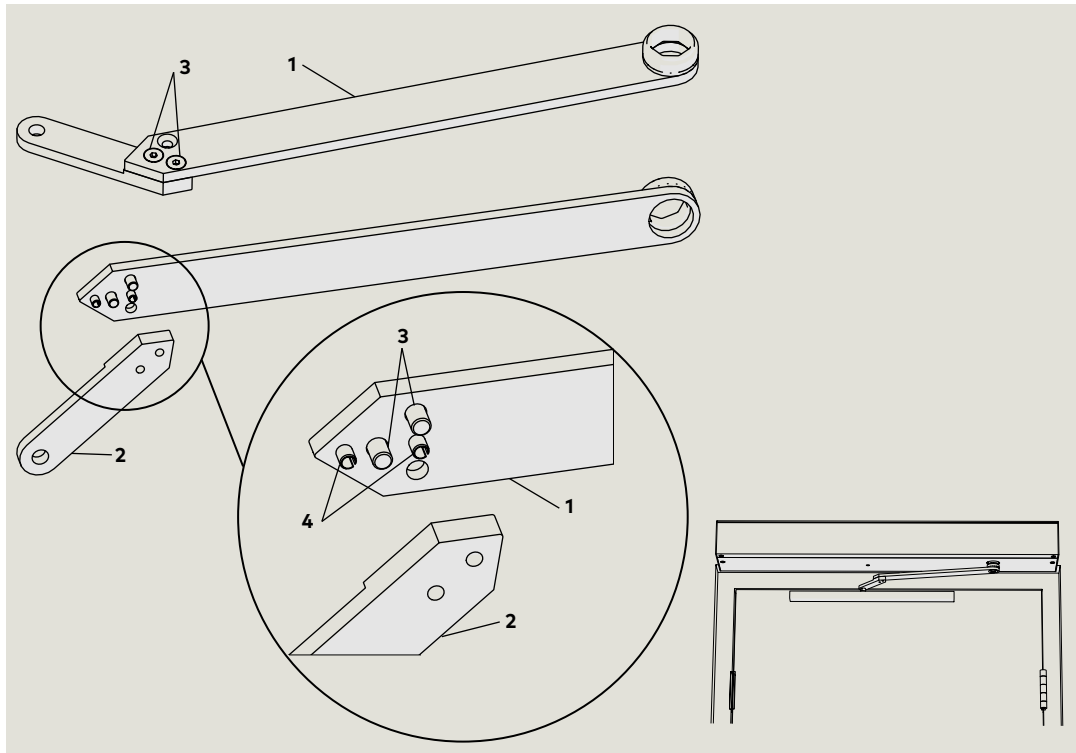
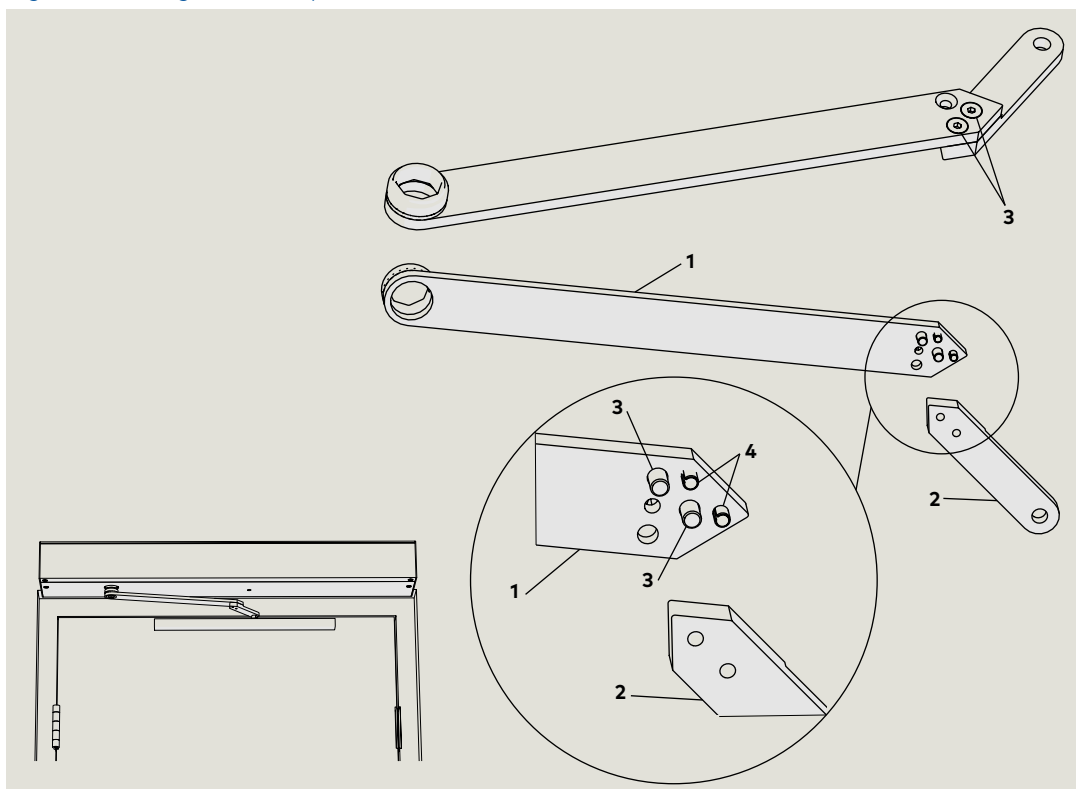


Fig. 15.3.8 Hinge side, RH pull

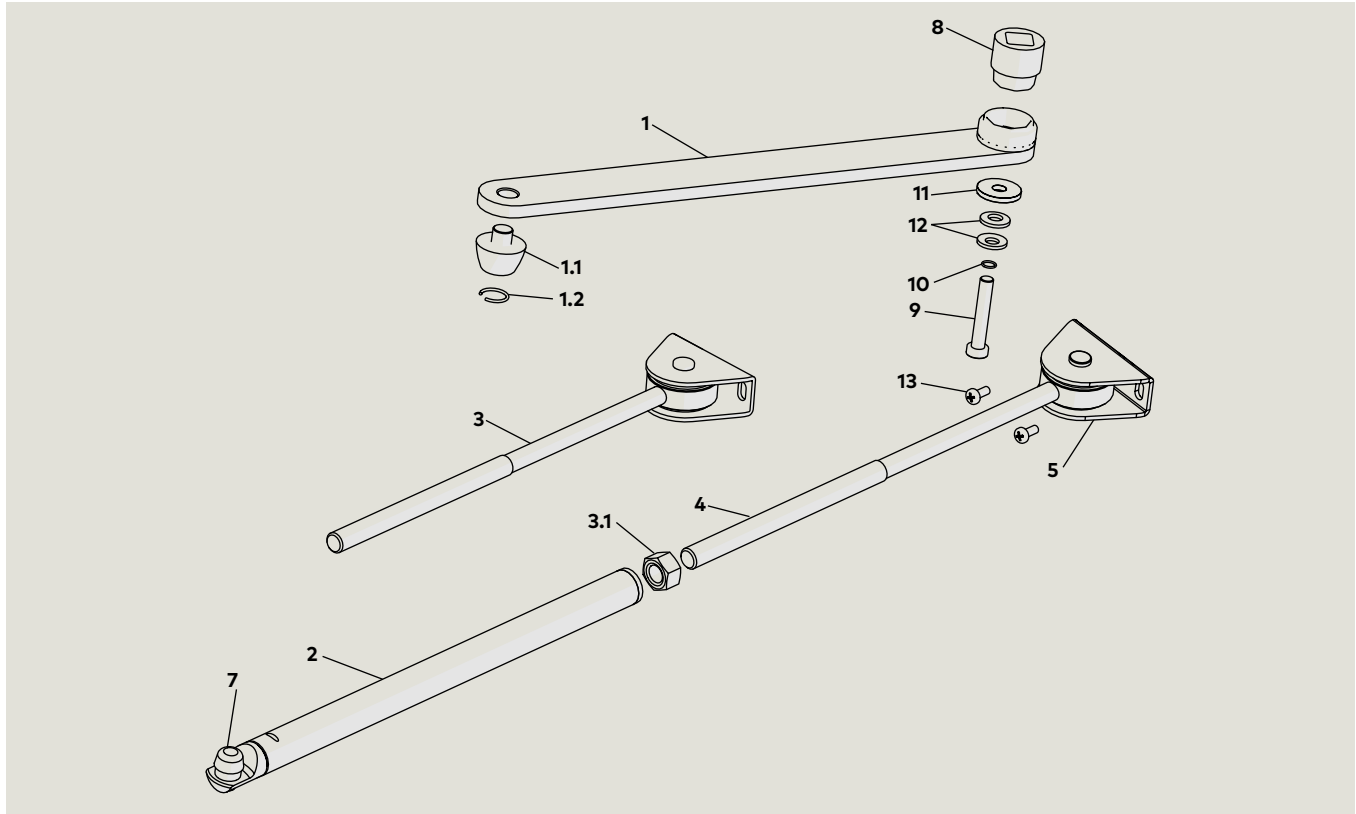
- 1 CPD arm
- 2 CPD lever
- 3 M6x16-10.9 FHSCS
- 4 Guide pin



# 16 Push arm installation

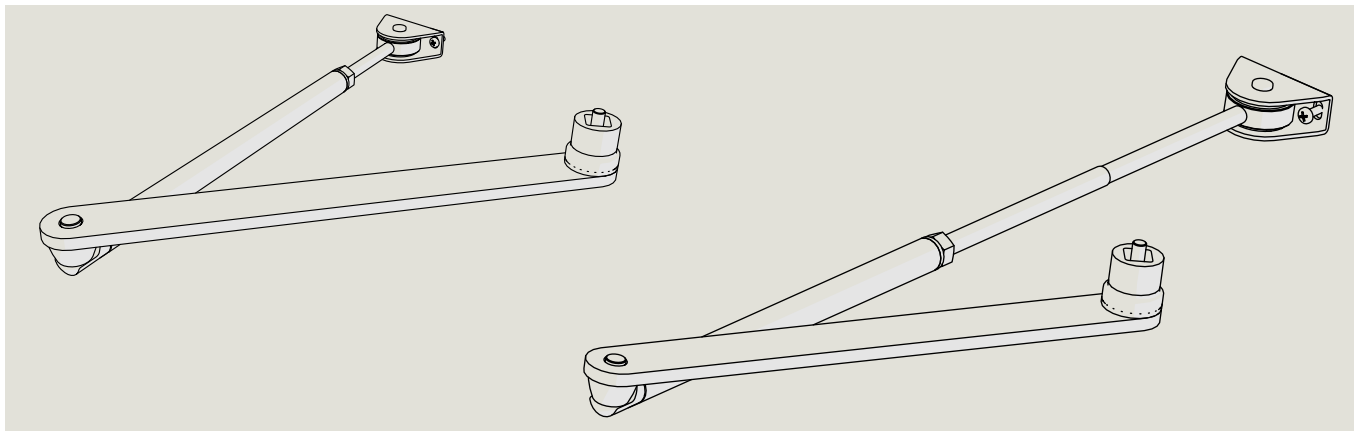
## 16.1 Hardware

Fig. 16.1.1 Push arm assembly hardware



- |                           |                              |  |                             |
|---------------------------|------------------------------|--|-----------------------------|
| <b>1</b> Arm              | <b>3.1</b> Nut               | <b>8</b> Axle extension<br>(Chapter 5) | <b>12</b> Conical spring    |
| <b>1.1</b> Arm socket     | <b>4</b> Deep connecting rod | <b>9</b> M8 SHCS, (custom)             | <b>13</b> Screw or fastener |
| <b>1.2</b> Retaining ring | <b>5</b> Shoe                | <b>10</b> O ring                       | <b>14</b> Operator axle     |
| <b>2</b> Adjustment screw | <b>7</b> Ball head           |  |                             |
| <b>3</b> Connecting rod   |                              |  |                             |

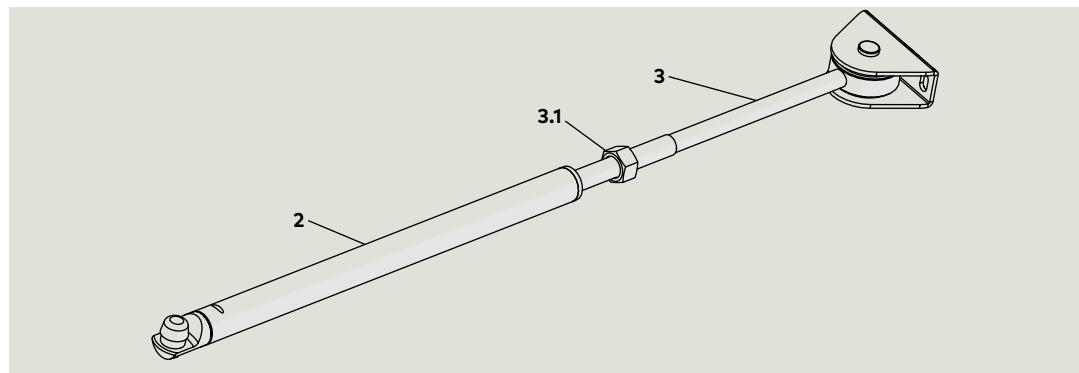
Fig. 16.1.2 Standard and deep push arm assemblies



## 16.2 Assemble adjustment screw to connecting rod.

- 2 Adjustment screw
- 3 Connecting rod assembly
- 3.1 Nut

Fig. 16.2.1 Adjustment screw and connecting rod



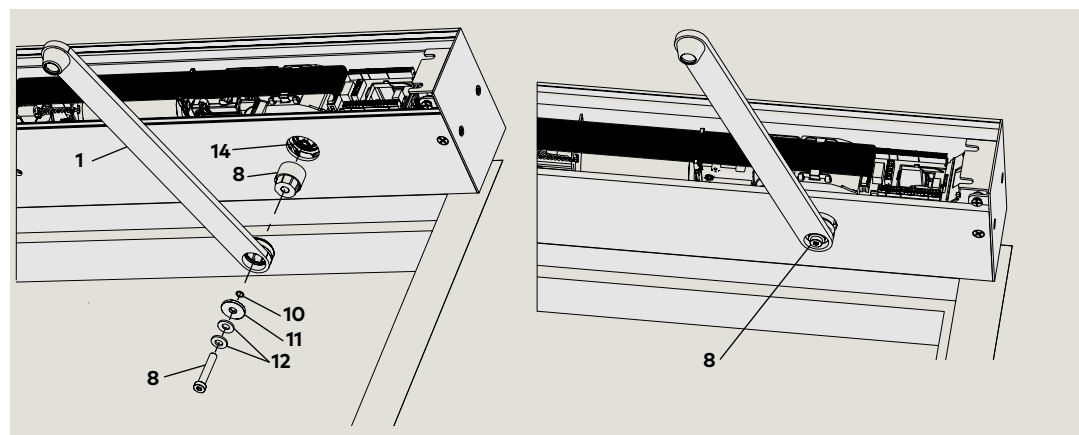
### 16.2.1 Assemble adjustment screw to connecting rod assembly

1. Thread nut onto connecting rod assembly.
2. Thread adjustment screw onto connecting rod assembly.

## 16.3 Assemble drive arm to operator

- 1 Drive arm
- 8 Axle extension (Chapter 5)
- 9 M8 SHCS (custom)
- 10 O ring
- 11 Flat washer
- 12 Conical spring
- 13 Screw
- 14 Operator axle

Fig. 16.3.1 Drive arm assembly to operator axle



### 16.3.1 Attach drive arm to operator

1. Assemble hardware onto M8 SHCS.
2. Position arm as shown in Fig. 16.3.1, place axle extension in arm and insert extension into operator drive axle.
3. Thread M8 SHCS into operator.

### 16.3.2 Tighten M8 SHCS

1. Tighten M8 SHCS into operator axle with 5 mm hex key.

#### CAUTION

Insure washers are seated properly as M8 screw is tightened!

2. Use torque wrench with 5 mm hex key socket to tighten M8 screw to 26 ft-lb.



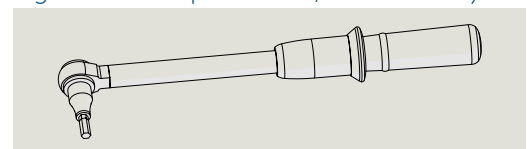
#### WARNING

Use caution when working in proximity of door and push arm!

#### CAUTION

Use torque wrench with hex key socket to tighten M8 screw to 26 ft-lb.

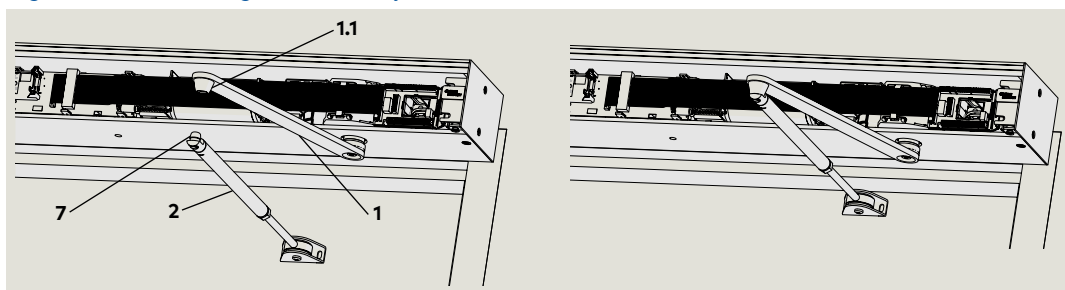
Fig. 16.3.2 Torque wrench, 5 mm hex key



## 16.4 Insert adjustment screw ball head into arm socket

- 1 Arm
- 1.1 Arm socket
- 2 Adjustment screw
- 7 Adjustment screw ball head

Fig. 16.4.1 Fastening arm and adjustment screw



**16.4.1 Door must be closed.**

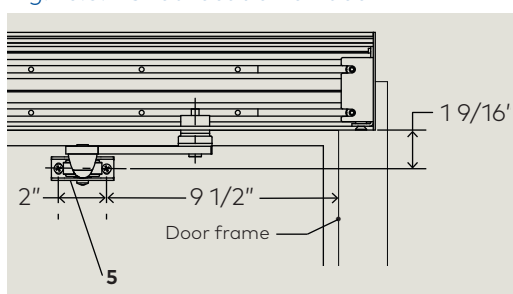
**16.4.2 Connect arm to adjustment screw**

1. Insert adjustment screw ball head into arm socket. Spring in socket will retain ball head in socket.

## 16.5 Fasten connecting rod shoe to door

- 5 Shoe

Fig. 16.5.1 Shoe location on door



**16.5.1 Push arm templates**

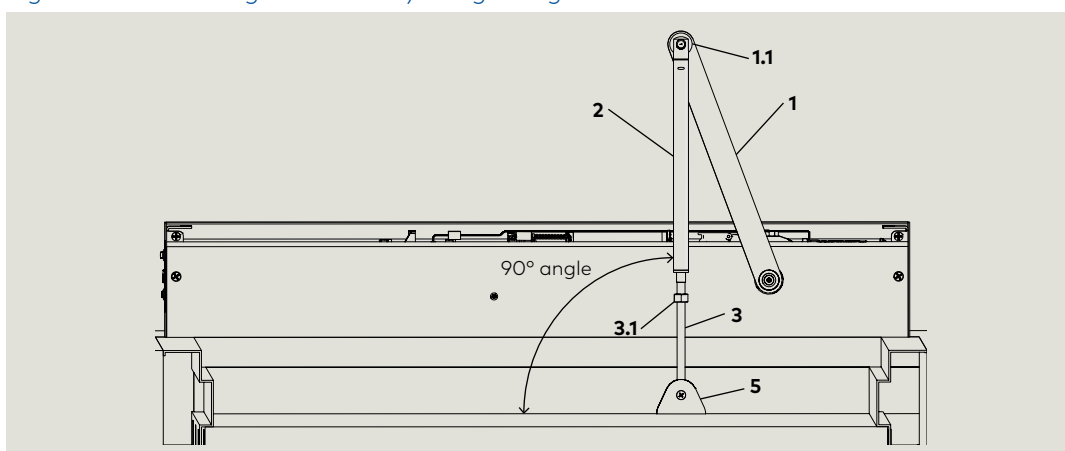
Push arm templates (Para. 13.4, 13.5) document location of push arm shoe on door.

**CAUTION**

The horizontal location of the shoe from edge of door frame is determined based on exact shoe location with push arm at right angle to door (Para. 16.5.2).

Fig. 16.5.2 Connecting rod assembly at right angle to door

- 1 Arm
- 1.1 Arm socket
- 2 Adjustment screw
- 3 Connecting rod
- 3.1 Nut
- 5 Shoe

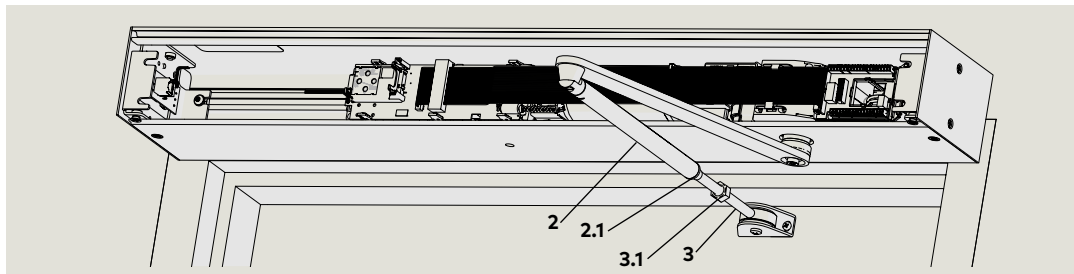


**16.5.2 Secure connecting rod shoe to door.**

1. Door must be fully closed.
2. Select screw or fastener for shoe mounting (Ref. Chapter 6, accessory kits, push arm mounting).
3. Loosen lock nut on connecting rod.
4. Using square, position adjustment screw/connecting rod assembly at right angle to door.
5. With shoe against door, mark the two shoe mounting hole locations on door.
6. Drill holes in door, hole size based on selected screw or fastener (Ref. Chapter 6, Accessory kit).
7. Fasten shoe to door using selected screw or fastener.

- 2 Adjustment screw
- 2.1 Socket
- 3 Connecting rod assembly
- 3.1 Nut
- 8 M8 SHCS (custom)

Fig. 16.5.3 Adjustment screw and nut

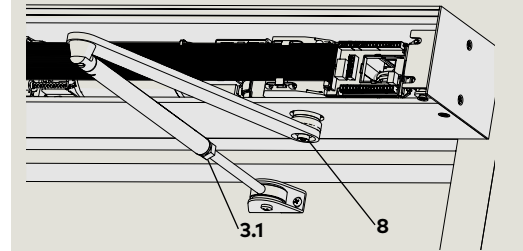


**16.5.3 Secure adjustment screw position.**

1. Rotate nut counterclockwise until it is against face of adjustment screw socket and tighten nut.

**CAUTION**

After tightening nut, check that connecting rod assembly is at 90 degrees to door with door closed. If not, redo procedure.

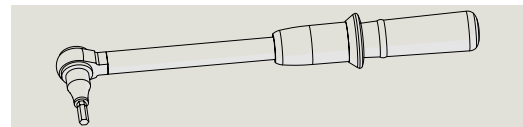


2. Open and close door several times, then retorque M8 SHCS.

**CAUTION**

Using torque wrench with 5 mm hex key socket, torque M8 SHCS to 26 ft-lb.

Fig. 16.5.4 Torque wrench, 5 mm hex key



# 17 Measure door width, reveal depth

## 17.1 Door width parameter Tb

Parameter	Description	Reference paragraph, parameters
2 <span style="border: 1px solid black; padding: 2px;">Tb</span> <span style="border: 1px solid black; padding: 2px;">rb</span>	Door width	Para. 20.1.9

**17.1.1 Door width parameter**

Door width is set in increments of 100 mm (4").  
 Measured width of 900 mm (35.4")  
 = **Tb** value of "8".

### 17.2 Record door width measurement, Tb value

Parameter Tb value	Door width measurement



## 17.3 Tb parameter values

**17.3.1 ED50 door width**

Door width measurement			
Inches	[mm]	<b>Tb</b>	Width inches
28 to 31 15/16	[711] [811]	7	28
32 to 35 15/16	[813] [912]	8	32
36 to 39 15/16	[914] [1014]	9	36
40 to 43 15/16"	[1016] [1116]	10*	40
44 to 47 15/16	[1118] [1218]	11	44
48 to 51 15/16	[1219] [1319]	12	48

\*Factory setting

## 17.4 Reveal depth parameter rd

Parameter	Description	Reference paragraph
2  	Reveal depth	

### 17.4.1 Reveal depth parameter

1. Reveal depth is set in increments of 10 mm (approximately 3/8").
2. Measured reveal depth of 30 mm (approximately 1 3/16") equals **rd** parameter value of 3.

## 17.5 Measure and record reveal depth, rd value

### 17.5.1 Reveal depth parameter

Parameter rd value	Reveal measurement

Fig. 17.5.1 CPD pull arm and lever with track



#### TIPS AND RECOMMENDATIONS

Use of CPD pull arm and lever (Fig. 17.5.1): Value of parameter **rd** must be reduced by 3/16" [30].

- Example: ED50 with CPD pull arm and lever in pull installation with reveal of 30 mm (1 1/8").  
Parameter rd setting = 0  
(Reveal of 30 mm - 30 mm).

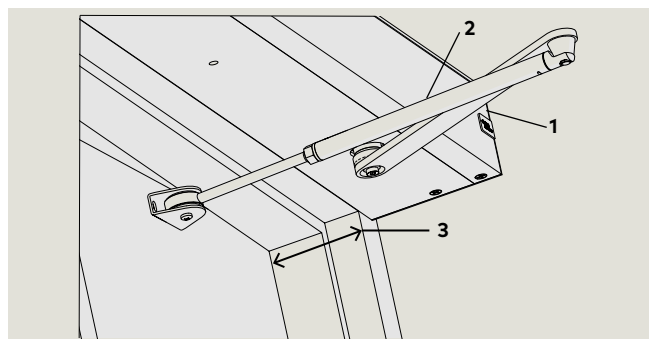
## 17.6 rd parameter values

### 17.6.1 ED50 reveal depths, rd parameter

Reveal measurement		
ED50		
Inches	[mm]	<b>rd</b>
-1 3/16	-30	-3
-3/4	-20	-2
-3/8	-10	-1
0	0	0
3/8	10	1
3/4	20	2
1 1/8	30	3
1 9/16	40	4
1 15/16	50	5

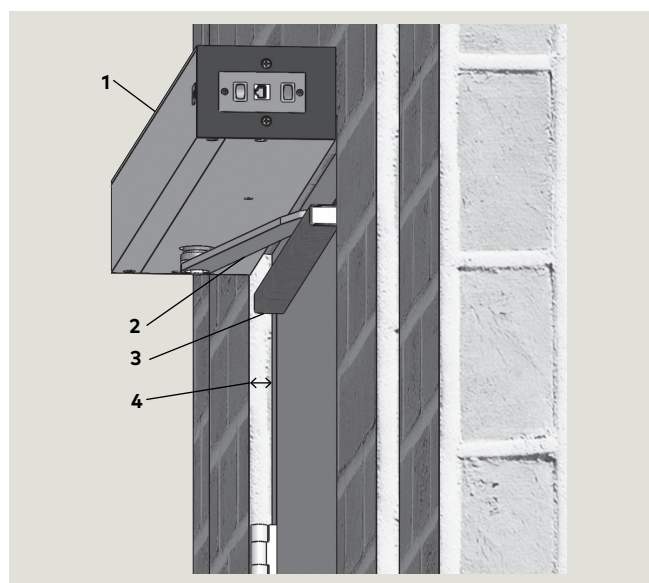
Reveal measurement		
ED50		
Inches	[mm]	<b>rd</b>
2 3/8	60	6
2 3/4	70	7
3 1/8	80	8
3 1/2	90	9
3 15/16	100	10
4 5/16	110	11
4 3/4	120	12
5 1/8	130	13

Fig. 17.4.1 Positive reveal



- 1 ED50 header
- 2 Push arm
- 3 Positive reveal
- 4 Positive reveal

Fig. 17.4.2 Negative reveal



- 1 ED50 header
- 2 Pull arm
- 3 Track
- 4 Negative reveal

Reveal measurement		
ED50		
Inches	[mm]	<b>rd</b>
5 1/2	140	14
5 7/8	150	15
6 5/16	160	16
6 11/16	170	17
7	180	18
7 1/2	190	19
7 7/8	200	20
8 1/4	210	21

Reveal measurement		
ED50		
Inches	[mm]	<b>rd</b>
8 5/8	220	22
9	230	23
9 7/16	240	24
9 13/16	250	25
10 1/4	260	26
10 5/8	270	27
11	280	28
11 7/16	290	29



# 18 Braking circuit plug

## 18.1 Braking circuit plug position

- 1 Braking circuit plug
- 2 Braking circuit 3 pin socket
- 3 User interface

Fig. 18.1.1 Braking circuit socket and plug; plug factory installed in pull arm location

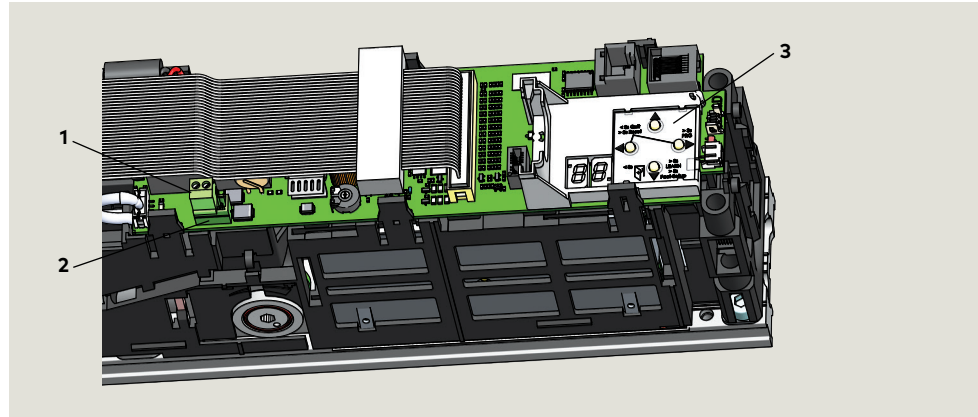


Fig. 18.1.2 Plug position, pull arm

- 1 Braking circuit plug
- 2 Braking circuit 3 pin socket

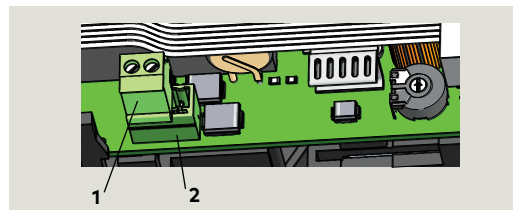


Fig. 18.1.3 Power switch

- 4 Power switch (shown ON)

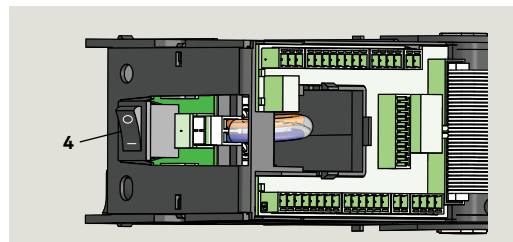


Fig. 18.1.4 Plug position, push arm

- 1 Braking circuit plug
- 2 Braking circuit 3 pin socket

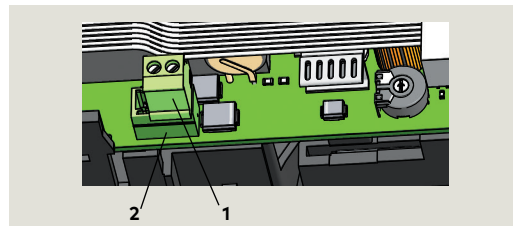
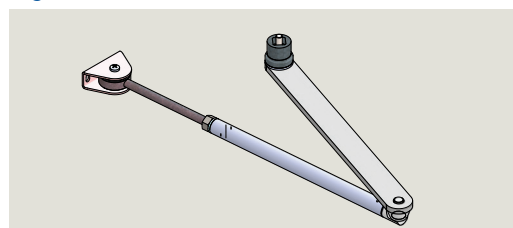


Fig. 18.1.5 Push arm



### 18.1.1 Braking circuit plug

Operator Braking circuit plug is positioned in its 3 pin socket for a pull arm or push arm (Figs. 18.1.5, 18.1.6).

- **Braking circuit plug is factory installed in 2 pins away from user interface, the pull arm position** Fig. 18.1.1 and Fig. 18.1.2).



#### WARNING

Braking circuit will not work correctly if braking circuit plug is improperly positioned, or if an incorrect plug is used!

Door may close at high speed and/or be difficult to open!

### 18.1.2 Change braking circuit plug position

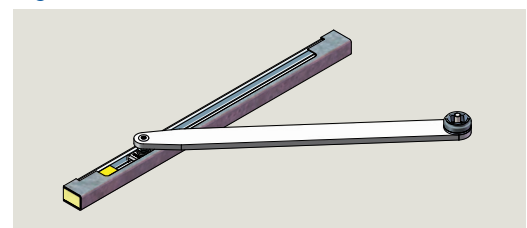
To change plug position for push arm, install plug in right 2 pins, toward user interface (Fig. 18.1.4).



#### WARNING

Insure power switch is OFF before changing plug position!

Fig. 18.1.6 Pull arm with track

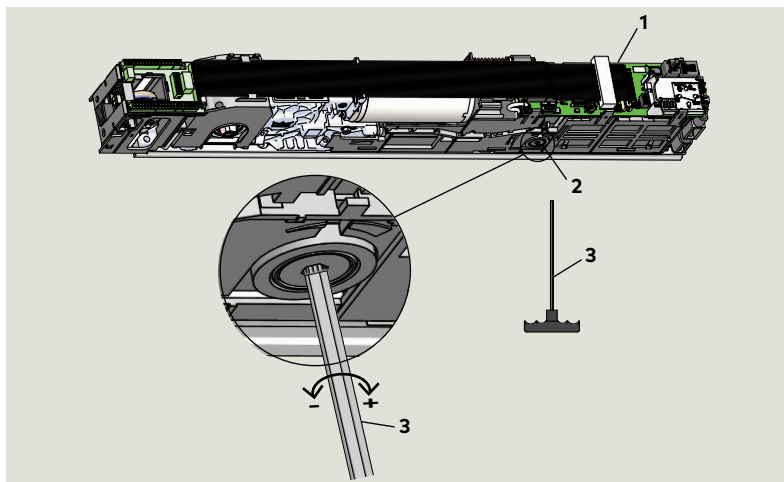


# 19 Operator spring tension

## 19.1 Set operator spring tension

- 1 ED100/ED250 operator
- 2 Spring tension adjustment
- 3 T handle hex key, 5 mm

Fig. 19.1.1 Spring tension adjustment



### 19.1.1 Spring tension setting revolutions

Door width				
Inches	32	36	42	48
mm	813	914	1067	1219
Spring setting revolutions				
ED50	10	14	16	18

### 19.1.2 Operator spring tension function

1. Spring tension sets closing force on door.
2. Required spring tension is based on door width.

### 19.1.3 Spring tension adjustment factory setting

1. Spring tension adjustment is factory set fully CCW, no spring tension.
2. Spring must be pretensioned per Para. 19.1.1.

**CAUTION**

A minimum of ten spring tension revolutions are required to operate system.

**CAUTION**

Any change to spring tension setting requires a new learning cycle (Chapter 22)!



### TIPS AND RECOMMENDATIONS

System checks spring tension during learning cycle (Chapter 23).

Learning cycle will be canceled if spring is insufficiently tensioned; door will stop and display will show a rotating "0" and an "F".



### 19.1.4 Check door closing force

1. Para. 19.1.1 lists approximate spring tension settings.
2. Use pressure gauge to check door closing force at 2° and adjust tension setting if necessary.

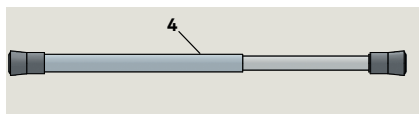


### TIPS AND RECOMMENDATIONS

Reference Chapter 29, ANSI/BHMA standards for closing forces.

Fig. 19.1.2 Door pressure gauge

- 5 Door pressure gauge

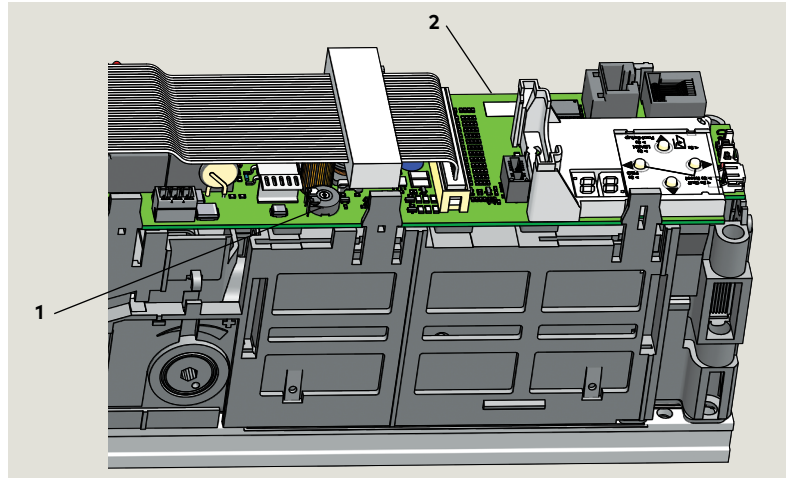


# 20 Power fail closing speed

## 20.1 Set power fail closing speed

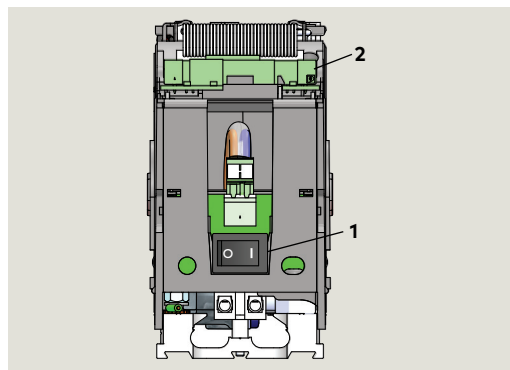
- 1 Power fail closing speed potentiometer
- 2 Control board

Fig. 20.1.1 Power fail closing speed potentiometer



- 1 Power on switch
- 2 Terminal board

Fig. 20.1.2 Power on switch



### TIPS AND RECOMMENDATIONS

Power fail closing speed potentiometer:

- Single turn
- Factory setting fully CCW.
- CCW increases closing speed.
- CW decreases closing speed.
- Terminal flat blade screwdriver required 3/32" [2 - 3 mm].

#### 20.1.1 Setting door closing speed upon power failure.

1. Turn ED50 power switch OFF.
2. Manually open door to 90° angle and let it close.
3. If door closes in less than 3 seconds, turn potentiometer 1/4 turn CW and retry test.
4. Adjust as necessary to obtain closing time greater than 3 seconds.

### NOTICE

It is imperative that this door closing time be set. If door closes in less than 3 seconds, error message **E 73** (System error 3, braking circuit) will be displayed. Reference ED50 Service manual, Troubleshooting.

# 21 Parameters

## 21.1 Parameters

### 21.1.1 Firmware version



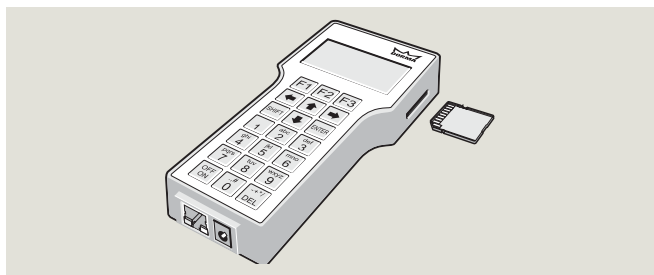
#### TIPS AND RECOMMENDATIONS

- Parameters descriptions incorporate firmware version v1.4.

### 21.1.2 Firmware version and updates.

- Operator firmware version is displayed during first commissioning. Reference Chapter 22.
- dormakaba handheld can be used to check operator firmware version and to perform firmware updates. Reference Service manual Chapter 16, dormakaba handheld, or dormakaba handheld manual.

Fig. 21.1.1 dormakaba handheld terminal



### 21.1.3 Configuration parameters

Configuration parameters (Para. 21.1.7) are set during first commissioning (Chapter 22).

### 21.1.4 Driving parameters

Driving parameters can be set once first commissioning has been completed.

- Reference Para. 21.1.8 for a list of driving parameters.
- Reference ED50 service manual Chapter 14 for details on each driving parameter.

### 21.1.5 Changing parameter values

- Set program switch to the CLOSE position

Fig. 21.1.2 Program switch

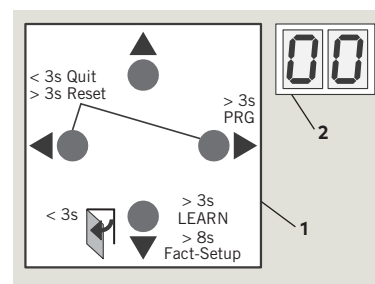


- Program switch, 3 position

- Use 4 button keypad as outlined in Steps 1 through 8 to view or change parameter values.

Fig. 21.1.3 4 button keypad, 2 digit display

- 4 button keypad
- 2 digit display



<b>Step 1</b> ▶	Press and hold right button > 3 s to enter program mode.
<b>Step 2</b> ◆	Press up or down button to scroll through parameters until desired parameter is displayed.
<b>Step 3</b> ▶	Press right button to display current parameter value.
<b>Step 4</b> ▶	Press right button again to enable editing of value, display will start flashing.
<b>Step 4</b> ◆	Press up or down button to select desired parameter value.
<b>Step 5</b> ▶	Press right button to save selected value. Display stops flashing.
<b>Step 6</b> ◀	Press left button to return to selected parameter.
<b>Step 7</b> ◆	Press up or down button to scroll through parameters until next desired parameter is displayed.
<b>Step 8</b> ◀	Press left button for a minimum of 3 s to exit program mode.

### 21.1.6 Configuration parameters

Parameter	Description
1 AS AS	Installation type
2 rd rd	Reveal depth
3 Tb rb	Door width
4 dL dL	Door type

### 21.1.7 Driving parameters

Driving parameter	Description
5 So So	Opening speed, automatic mode
6 Sc Sc	Closing speed, automatic mode
7 dd dd	Hold open time, automatic mode
8 dn dn	Hold open time, night/bank
9 do do	Hold open time, manual opening of door
10 Sb Sb	Wall masking on door swing (hinge) side
11 ST SR	Safety sensor test
12 SA SR	Activation by safety sensor on approach (opposite hinge) side
13 SP SP	Suppression of safety sensor on swing (hinge) side during initial movement
14 Ud Ud	Locking mechanism delayed opening time
15 Pu Pu	Door preload prior to unlocking
16 TS RS	PR (Power reserve) module test
17 Fo Fo	Static force on door closing edge in opening direction (wind load control)
18 Fc Fc	Static force on door closing edge in closing direction (wind load control)
19 EP EP	Motor driven latching action, automatic mode
20 EA EA	Door opening angle at which motor driven latching action is activated
21	Left intentionally blank
22 PG PG	Push and Go
23 PS PS	Program switch type
24 S1 S1	DCW EPS, electronic program switch behavior following a power reset
25 S2 S2	Internal program switch; switch function on delay
26 du du	Door unlocking during business hours
27 Sr Sr	Status relay function, terminal block X7



### TIPS AND RECOMMENDATIONS

Driving parameter details can be found in the ED50 Service Manual, Chapter 14.

Driving parameter	Description
28 bE bE	Input 4/4a and X3, 1G 24V locking device output configuration
29 CC CC	Cycle counter, number displayed * 10000
30 EC EC	Delete error log
31 CS CS	Reset service interval display (yellow LED)
32 SL SL	Factory setting level (Fact Setup button)
33 OA OA	Opening angle, set during learning cycle
34 hd hd	Door closer mode, automatic or manual
35 hA hA	Power assist function activation angle
36 hF hF	Power assist function force adjustment
37 hS hS	Power assist function support for manual mode in door closed position
38 F1 F1	Upgrade card, fire protection
39 F2 F2	This paragraph left intentionally blank.
40 F3 F3	Professional upgrade card, flip flop function, night/bank
41 F4 F4	Professional upgrade card, extended hold open time
42 F5 F5	Professional upgrade card, nurse-bed function (double doors only)
43 F7 F7	Upgrade card, barrier free toilet
44 F8 F8	Upgrade card, DCW I/O module
45 C1 C1	Configuration of COM 1 interface
46 bc bc	Back check angle when door opened manually
47 Td rd	Door thickness (mm)
48 d1 d1	Deactivation of drive, emergency pushbutton at X4, 4 and 4a, trigger type
49 d2 d2	Night/bank function, trigger type
50 FC FC	Hold open system release by manually closing door, trigger type
51 Ad Ad	Active door with astragal: caster angle; angle door must reach before passive door starts to open
52 HS HS	Hinge clearance

**21.1.8 Configuration parameters, detail**






Parameter and value range, factory setting = <b>bold</b> .	Parameter description
1  0 - 2 <b>0</b>	<b>Installation type</b> <ul style="list-style-type: none"> <li>• Pull arm, wall mounting on swing (hinge) side (Fig. 21.1.4).</li> <li>• Pull arm and CPD lever, wall mounting on swing (hinge) side (Fig. 21.1.5).</li> </ul>
	1 <ul style="list-style-type: none"> <li>• Standard push arm, wall mounting on approach (non-hinge) side (Fig. 21.1.6).</li> </ul>
	2 <ul style="list-style-type: none"> <li>• Push arm with track, wall mounting on approach (non-hinge) side.</li> <li>• [Application specific]</li> </ul>
2  ED50 -3 to 29 <b>0</b>	<b>Reveal depth</b> <p>Reveal is set in increments of 10 mm (3/8"), "3" = 30 mm (1 1/8")</p> <ul style="list-style-type: none"> <li>• ED50: [-30 to 290mm] -1 3/16" to 11 13/32"</li> </ul>
	<b>0</b> <p>If using CPD arm and lever (Fig. 21.1.5), approximately 1 3/16" [30 mm] must be deducted from actual reveal (Para. 17.4).</p>
3  ED50 7 to 12  <b>12</b>	<b>Door width</b> <p>Door width is set in increments of 100 mm (4"); "9" = 900 mm (35.4").</p> <ul style="list-style-type: none"> <li>• ED50: [700 - 1219] 28" - 48"</li> </ul>
4  0 to 4 <b>0</b>	<b>Door type</b> <p><b>0</b> Single door</p>
	Double door <ul style="list-style-type: none"> <li>1                             <ul style="list-style-type: none"> <li>• Overlapping door (with astragal)</li> <li>• Active door operator.</li> </ul> </li> </ul>
	Double door <ul style="list-style-type: none"> <li>2                             <ul style="list-style-type: none"> <li>• Overlapping door (with astragal)</li> <li>• Passive door operator.</li> </ul> </li> </ul>
	Double door <ul style="list-style-type: none"> <li>3                             <ul style="list-style-type: none"> <li>• Edgeless door (no astragal)</li> <li>• Active door operator.</li> </ul> </li> </ul>
	Double door <ul style="list-style-type: none"> <li>4                             <ul style="list-style-type: none"> <li>• Edgeless door (no astragal)</li> <li>• Passive door operator.</li> </ul> </li> </ul>

Fig. 21.1.4 Pull arm with track

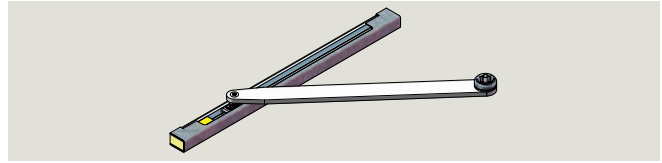
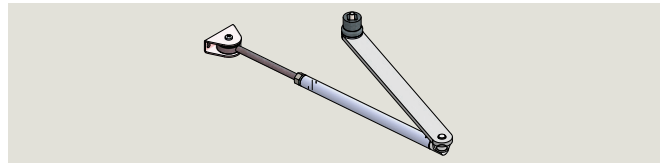


Fig. 21.1.5 Pull arm and CPD lever with track



Fig. 21.1.6 Standard push arm



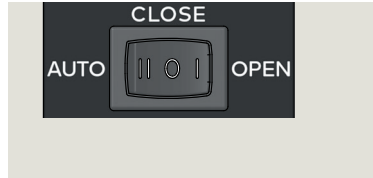
**21.1.9 Push arm with track [Application specific].**

# 22 Single door first commissioning

## 22.1 First commissioning

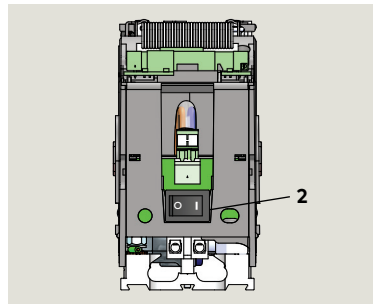
- 1 Program switch, 3 position

Fig. 22.1.1 Program switch



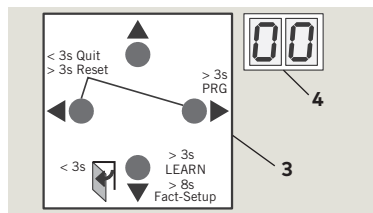
- 2 Power switch

Fig. 22.1.2 Power switch



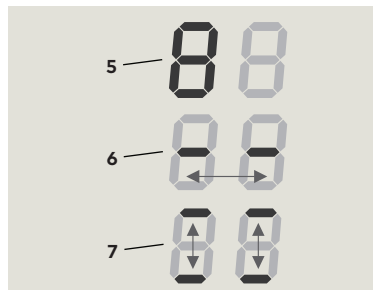
- 3 Four button keypad
- 4 Two digit display

Fig. 22.1.3 4 button keypad, 2 digit display



- Two digit displays
- 5 System check
- 6 Self check
- 7 Horizontal dashes up and down

Fig. 22.1.4 2 digit displays on power up



- 8 Device ID, firmware version display

Fig. 22.1.5 Device ID, firmware version display



- 9 Program mode display

Fig. 22.1.6 Program mode



### 22.1.1 Conditions prior to commissioning.

1. Header with operator is installed.
2. Push arm or pull arm with track is installed.
3. Activators, key switches, and other separately supplied hardware are installed and connected to operator.
4. 115 Vac branch circuit to operator is energized.
5. Operator motor is cold.

### CAUTION

Motor must be cold for commissioning!

### 22.1.2 Program switch to CLOSE position.

1. Set program switch (1) to CLOSE position.

### 22.1.3 Power switch to ON position.

1. Set power switch (2) to ON position.
  - System check, series of letters and numbers rapidly displayed (5).
  - Control unit self check, two segments jumping back and forth (6).
  - Horizontal dashes move up and down (7).

### 22.1.4 4 button keypad down button

1. Press four button keypad down button:
  - While 2 digit display segments move up and down (7), letters and numbers will change if required to display correct orientation.
2. Display scrolls (8):
  - Device ID (Ed 50)
  - Firmware version (format F x x x x)
3. Program mode display:
  - Program mode (9) will be displayed indicating system requires further parameter settings.



### TIPS AND RECOMMENDATIONS

If pressing down button (Para. 22.1.4) does not result in desired display orientation, return to Para. 22.1.2, turn power button off, then on to repeat commissioning steps.

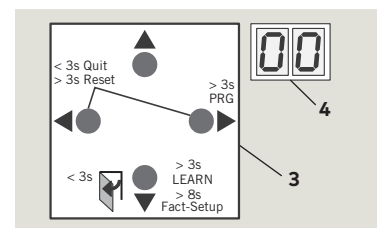
## 22.2 Set configuration parameters

### 22.2.1 Set parameter AS, installation type.

<b>Step 1</b> Press		Press and hold PRG > 3 s to enter program mode, AS parameter displayed. If no change required, go to step 7.
<b>Step 2</b> Press		Displays "00", factory setting.
<b>Step 3</b> Press		"00" starts flashing.
<b>Step 4</b> Press		Scroll to select parameter value. "1" shown as example.
<b>Step 5</b> Press		Saves value entered. Display stops flashing.
<b>Step 6</b> Press		Returns to Installation type parameter.

Fig. 22.2.1 4 button keypad, 2 digit display

- 3 Four button keypad
- 4 Two digit display



	Installation type
Parameter value	Parameter description
0*	Pull arm with track, wall mounting on swing (hinge) side.
1	Push arm, wall mounting on approach (opposite hinge) side.
2	Push arm with track, wall mounting on approach (opposite hinge) side.[Application specific]
*	Factory setting

### 22.2.2 Set parameter rd, reveal depth.

<b>Step 7</b> Press		Scroll to <b>rd</b> parameter.
<b>Step 8</b> Press		Displays "00", factory setting.
<b>Step 9</b> Press		"00" starts flashing.
<b>Step 10</b> Press		Scroll to select parameter value. "6" shown as example.
<b>Step 11</b> Press		Saves value entered. Display stops flashing.
<b>Step 12</b> Press		Returns to reveal depth parameter.



#### TIPS AND RECOMMENDATIONS

Reference Chapter 17 for reveal depth parameter values.

Configuration parameter settings continue on next page..



**22.2.3 Set parameter Tb, door width.**

<b>Step 13</b> Press ▼		Scroll to <b>Tb</b> parameter.
<b>Step 14</b> Press ▶		Displays "10", factory setting.
<b>Step 15</b> Press ▶		"10" starts flashing.
<b>Step 16</b> Press ◆		Scroll to select parameter value. "7" is example, for door widths of 28" to 31 15/16"
<b>Step 17</b> Press ▶		Saves value entered. Display stops flashing.
<b>Step 18</b> Press ◀		Returns to door width parameter. If single door, exit program mode (Step 25).
<b>Step 19</b> Press ◀		Exits program mode. Display indicates "ready for learning cycle".

**22.2.4 Parameter dL, door type.**

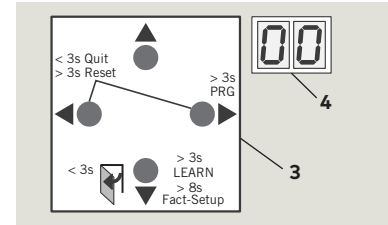


**TIPS AND RECOMMENDATIONS**

Parameter **dL** factory setting is 0, single door.

Fig. 22.2.2 4 button keypad, 2 digit display

- 3 Four button keypad
- 4 Two digit display



**TIPS AND RECOMMENDATIONS**

Reference Chapter 17 for door width parameter values.

## 22.3 Perform learning cycle

### CAUTION

Learning cycle must be performed while motor is cold!

### CAUTION

Door must not be manually moved or held in position during the learning cycle!

### CAUTION

Verify that the following parameters have been set (Para. 22.2):

- **AS**, Installation type
- **rd**, Reveal depth
- **Tb**, Door width



### TIPS AND RECOMMENDATIONS



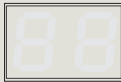





During learning cycle:

- Operator functions are deactivated.



### WARNING

No personnel or objects must be in range of door motion during learn cycle!

<b>Step 1</b>	Secure motion range of door.
<b>Step 2</b>	 <p>Set program switch to CLOSE position.</p>
	 <p>Rotating "o" and a "0" indicates operator learning cycle is required.</p>
<b>Step 3</b> Press ▼	 <p>Press and hold down button until display changes.</p> <ul style="list-style-type: none"> <li>• Door performs several movements and display shows a sequence of symbols.</li> <li>• Movements of door must not be interrupted!</li> </ul>
	 <p>Display indicates door is at 70° position and is waiting for door opening angle to be set.</p>
<b>Step 4</b>	<ul style="list-style-type: none"> <li>• Manually move door to desired opening angle.</li> <li>• Maximum door angle is 110°.</li> </ul>
<b>Step 5</b> Press ▼	 <p>Momentarily press down button to continue learning cycle.</p> <ul style="list-style-type: none"> <li>• Door performs several movements and display shows a sequence of symbols.</li> <li>• Movements of door must not be interrupted!</li> </ul>
	 <p><b>Operator spring tension too low.</b></p> <ul style="list-style-type: none"> <li>• Display with small rotating "o" and an "F" during learn cycle indicates spring tension is too low.</li> <li>• Door will close.</li> </ul> <ol style="list-style-type: none"> <li>1. Increase spring tension (Chapter 19).</li> <li>2. Restart learning cycle (Step 3).</li> </ol>
	 <p>Door completes learning cycle.</p> <ul style="list-style-type: none"> <li>• Display with two horizontal bars indicate operator is ready for operation.</li> </ul>
<b>Step 6</b> Press ▼	Momentarily press down button to cycle door.
<b>Step 7</b>	Following automatic learning cycle, actual forces on door, and door opening and closing times must be measured and changed if necessary to insure compliance with ANSI/BHMA standards, reference Chapter 29.
<b>Step 9</b>	 <p>Set program switch to Auto.</p>

# 23 Double door first commissioning

## 23.1 Separately commission active and inactive doors

### 23.1.1 Commission active door first.

1. Refer to Para.21.1 and commission active door.

### 23.1.2 Commission inactive door.

1. Refer to Para.21.1 and commission inactive door.

## 23.2 Set operator parameters for double door operation

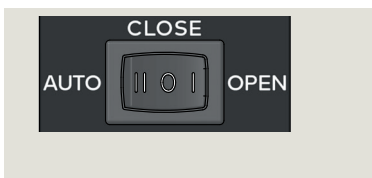
### 23.2.1 Active door, set parameters dL and Ad.

1. Set program switch to CLOSE.
2. Set parameters dL (door type) and Ad (caster angle ) for active door.

  - Caster angle sets opening angle of active door before inactive door starts to open. Factory setting is 30°.

Fig. 23.1.1 Program switch

1 Program switch, 3 position




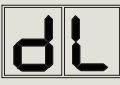




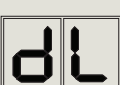

<b>Step 1</b> Press		Press and hold PRG > 3 s to enter program mode, AS parameter displayed.
<b>Step 2</b> Press		Scroll to dL parameter.
<b>Step 3</b> Press		Displays "00", factory setting.
<b>Step 4</b> Press		"00" starts flashing.
<b>Step 5</b> Press		Scroll to select parameter value ("1" as an example).
<b>Step 6</b> Press		Saves value entered. Display stops flashing.
<b>Step 7</b> Press		Returns to door type parameter.

	Door type
Parameter value	Parameter description
0*	Single door
1	Double door, with astragal. Active door operator, door opens first.
2	Double door, with astragal. Inactive door operator.
3	Double door, without astragal. Active door operator. Both doors open simultaneously.
4	Double door, without astragal. Inactive door operator. Both doors open simultaneously.
*	Factory setting

<b>Step 8</b> Press		Scroll to Ad parameter.
<b>Step 9</b> Press		Displays "30", factory setting.
<b>Step 10</b> Press		Scroll to select parameter value (10° as an example).
<b>Step 11</b> Press		Saves value entered. Display stops flashing.
<b>Step 12</b> Press		Returns to caster angle parameter.
<b>Step 13</b> Press		Exits program mode. Operator is ready for operation.

### 23.2.1 Inactive door, set parameter dL.

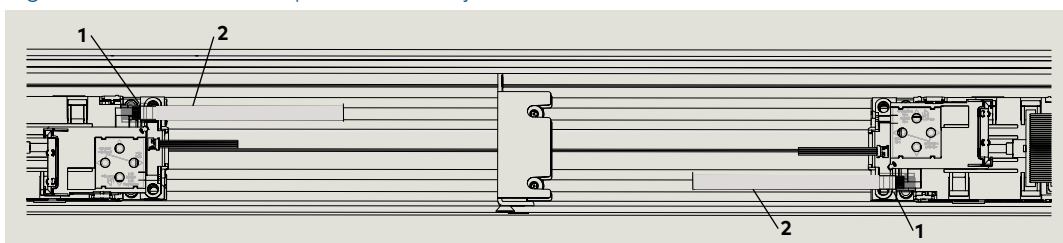
1. Set program switch to CLOSE.
2. Set parameter dL (door type) for inactive door.

<b>Step 1</b> Press		Press and hold PRG > 3 s to enter program mode, AS parameter displayed.
<b>Step 2</b> Press		Scroll to dL parameter.
<b>Step 3</b> Press		Displays "00", factory setting.
<b>Step 4</b> Press		"00" starts flashing.
<b>Step 5</b> Press		Scroll to select parameter value ("3" as an example).
<b>Step 6</b> Press		Saves value entered. Display stops flashing.
<b>Step 7</b> Press		Returns to door type parameter.
<b>Step 25</b> Press		Exits program mode. Operator is ready for operation.

## 23.3 Connect communication cable between operators

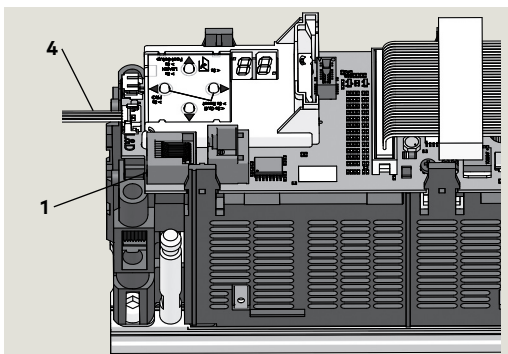
- 1 RJ45 jack (horizontal) for communication cable

Fig. 23.3.1 Double door operators, RJ45 jack for communication cable



- 1 RJ45 jack
- 4 Program switch cable

Fig. 23.3.2 RJ45 jack



### 23.3.1 Install communication cable

1. Set program switch to CLOSE.
2. Connect communication cable to active and inactive operator RJ45 jacks.
3. Secure cable to header

### 23.3.2 Test door operation

1. Set program switch to AUTO.
2. Test double door operation.

Fig. 23.3.2 ED50 Connection cable

- 2 Communication cable, DX3484 -010, 1750 mm -020, 2400 mm
- 3 RJ45 plug

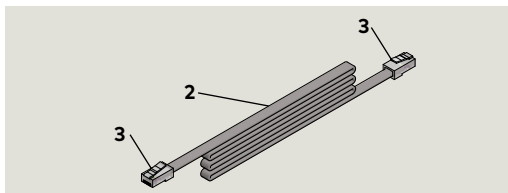


Fig. 23.3.3 Program switch

- 1 Program switch, 3 position



# 24 Set pull arm end stop

## 24.1 Set pull arm end stop position

Fig. 24.1.1 Program switch panel

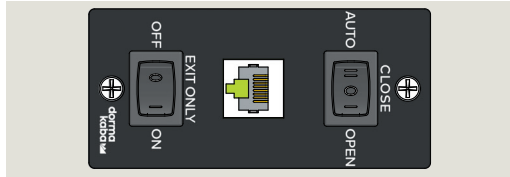
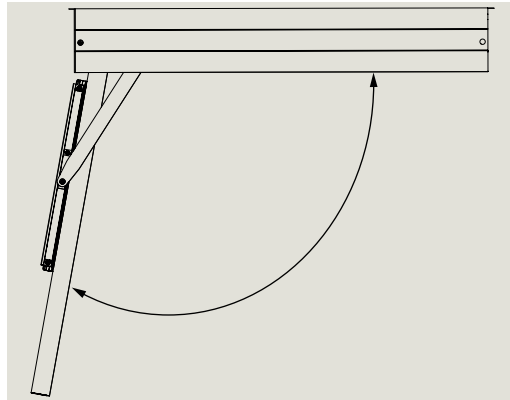


Fig. 24.1.2 Door at set opening angle



### 24.1.1 Set end stop position.

1. Set program switch to OPEN.
2. Door moves to set opening angle.



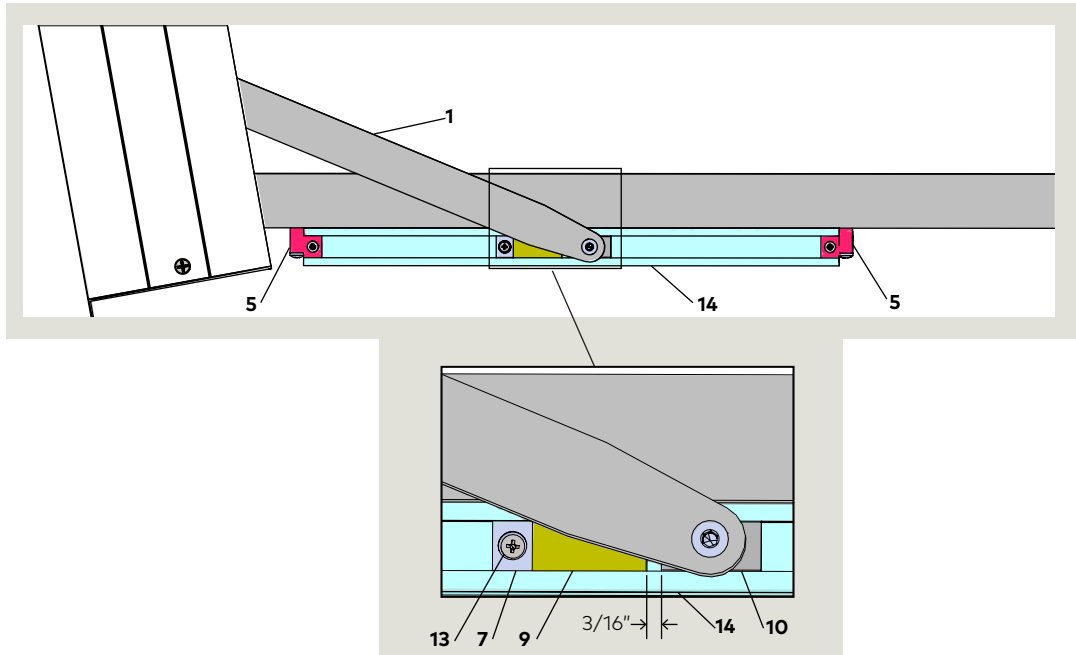
**WARNING**

Use caution when working in proximity of door and track.

3. Slide end stop and buffer toward slide shoe until buffer is 3/16" from edge of slide shoe (Fig. 24.1.3).
4. Tighten end stop M4 screw with #2 Phillips. Do not overtighten!

Fig. 24.1.3 Setting end stop location

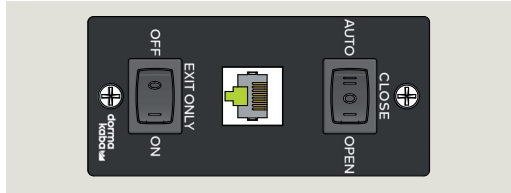
- 1 Arm
- 5 Fixing piece
- 7 End stop
- 9 Buffer
- 10 Slide shoe
- 13 M4 x20 FHS
- 14 Track



# 25 Install pull arm track cover

## 25.1 Install track cover, spacer blocks and end caps

Fig. 25.1.1 Program switch panel



### 25.1.1 Install track cover.

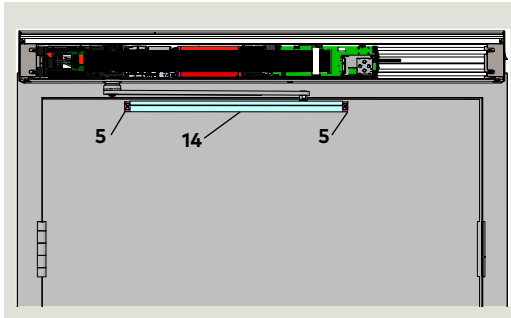
1. Set program switch to CLOSE.
2. Door will move to CLOSE position or remain in CLOSE position.



#### WARNING

Use caution when working in proximity of door and track.

Fig. 25.1.2 Door closed



- 5 Fixing piece
- 14 Track

3. Slide track cover over track.

### 25.1.2 Install spacer blocks and end caps.

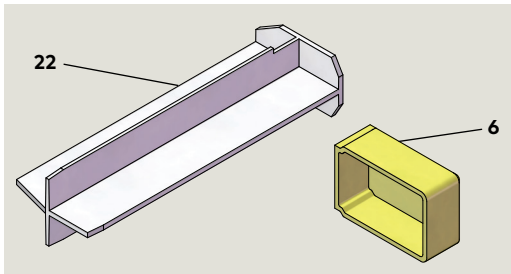
1. Place end caps on end of spacer blocks.



#### TIPS AND RECOMMENDATIONS

Refer to Figure 25.1.5 for spacer block and end cap orientation into track cover.

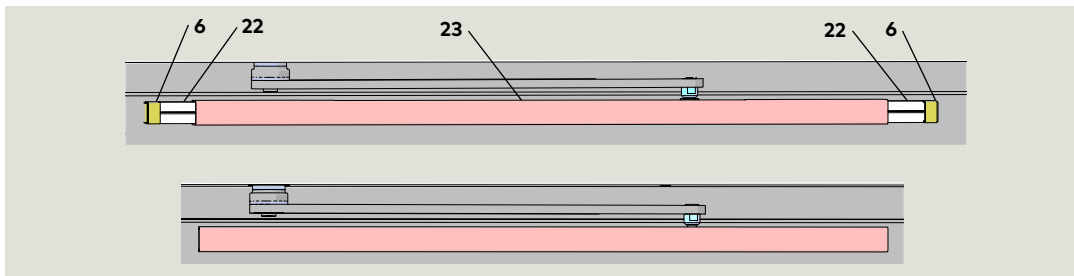
Fig. 25.1.3 Spacer block and end cap



- 6 End cap
- 22 Spacer block

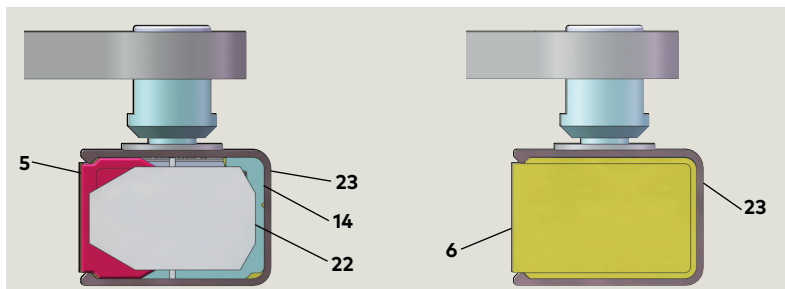
2. Slide spacer blocks into ends of track cover.
3. Adjust track cover position so both end caps are flush with end of track.

Fig. 25.1.4 Track cover, spacer block and end cap installation



- 6 End cap
- 22 Spacer block
- 23 Track cover

Fig. 25.1.5 Spacer block and end cap orientation in track



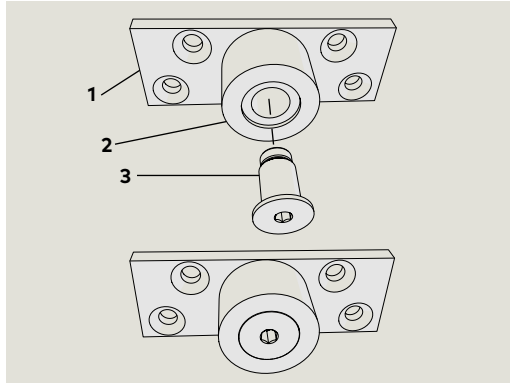
- 5 Fixing piece
- 6 End cap
- 14 Track
- 22 Spacer block
- 23 Track cover

# 26 Install push arm door stop

## 26.1 Install push arm bumper stop (optional assembly)

- 1 Bumper mounting plate
- 2 Bumper
- 3 1/2" shoulder screw with 5 mm hex

Fig. 26.1.1 Bumper stop assembly



**TIPS AND RECOMMENDATIONS**

Contact local dormakaba USA, Inc. company for bumper stop assembly 08104230.

**26.1.1 Assemble bumper stop.**

1. Attach bumper to bumper mounting plate with 1/2" shoulder screw. Use 5 mm hex key.

**26.1.2 Open door.**

1. Set program switch to OPEN.
2. Door moves to set opening angle.



**WARNING**

Use caution when working in proximity of door and push arm!.

Fig. 26.1.2 Program switch panel

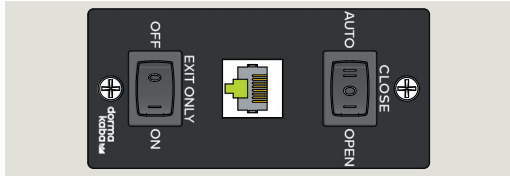
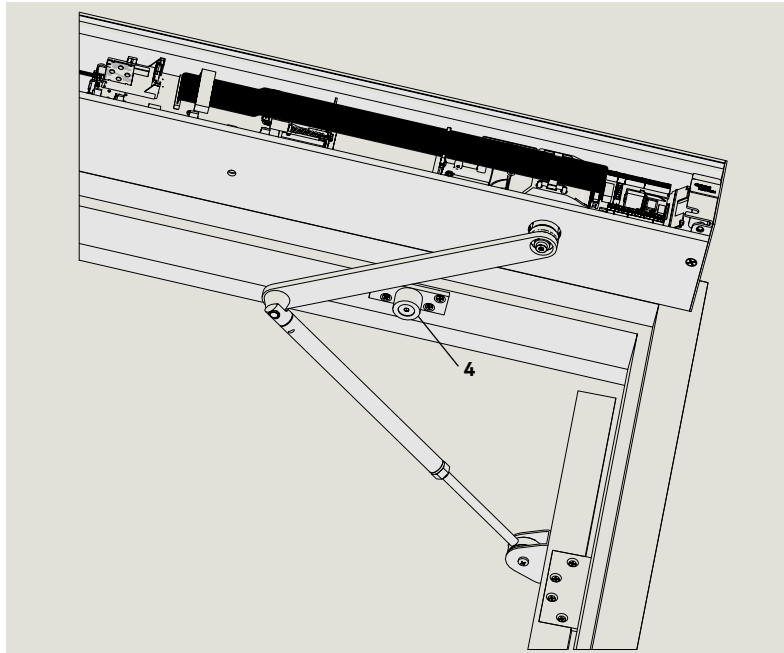


Fig. 26.1.3 Bumper stop installed

- 4 Bumper stop assembly



**26.1.3 Locate bumper stop on door frame.**

1. With door at its full open position locate bumper stop assembly on door frame 1/8" beyond arm.
2. Mark mounting plate hole locations on frame. Plate hole diameter is 1/4".
3. Select screws based on door frame material.

4. Attach bumper stop to door frame.

5. Using program switch, close then open door to verify arm does not contact bumper stop with door at full open position.

**26.1.4 Place program switch in AUTO.**

# 27 Install header cover

## 27.1 Install header cover.

- 1 Header cover
- 2 Flat head screw

Fig. 27.1.1 Single door header with cover installation

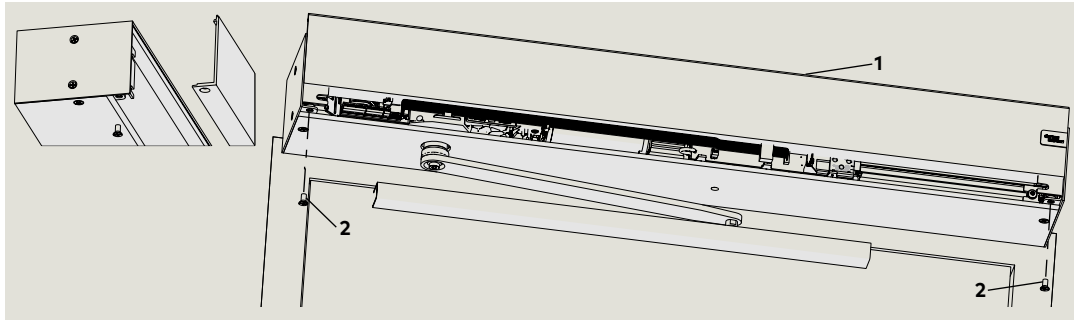
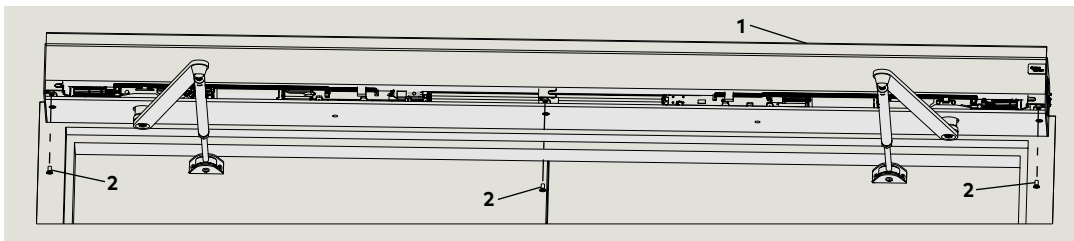


Fig. 27.1.2 Double door header with cover installation



### 27.1.1 Install header cover.

**CAUTION**

Before installing cover, check header assembly:

- All wiring secured.
- No pinched wiring.
- Remove any debris in header; assembly must be clean.

1. Install header cover on header and secure with supplied flat head screws.

Note: single header with pull arm shown as an example.

# 28 Install door signage

## 28.1 Install door signage

### 28.1.1 Install door signage based on type of door.

Install applicable door signage as outlined in Chapter 11, ED50 door signage.



# 29 ANSI/BHMA standards

## 29.1 A156.19 Low energy power operated doors

The following table references portions of content from ANSI/BHMA A156.19. Refer to the standard, available through ANSI or BHMA for additional information. Standard material reprinted with BHMA permission.

Reference ED50 service manual for additional parameter detail.

### 29.1.1 Door measurements, low energy power operated door

ED50 Parameter				A156.19 standard		
Parameter	Function	Factory setting	Adjustment range	Para.	Requirement	
<b>So</b>	Opening speed	Swing door opening speed, automatic mode	19°/s Note 1	8°/s - 27°/s	4.2	Opening Doors shall open from closed to back check or 80°; whichever occurs first, in 3 seconds or longer as required in Table I.  Total opening time to 90° shall be as in Table II (next page) If door opens at more than 90°; it shall continue at the same rate as back check speed.
<b>bc</b>	Back check	Checking or slowing down of door speed before door being fully opened.	10°	5° - 40°	4.2	Back check shall not occur before 60° opening. Entered angle is subtracted from set door opening angle. Example: set door opening angle = 90°; bc = 10, back check starts at 80°.
<b>Sc</b>	Closing speed	Swing door closing speed, automatic mode.	19°/s Note 1	8°/s - 27°/s	4.4	Closing Doors shall close from 90° to 10° in 3 seconds or longer as required in Table I (next page).  Doors shall close from 10° to fully closed in not less than 1.5 seconds.
<b>dd</b>	Hold open time	Hold open time (time delay)	5 s	5 s - 30 s	4.3	Time delay When powered open, the door shall remain open at the fully opened position for not less than 5 seconds. Exception: when push-pull activation is used, the door shall remain at the fully opened position for not less than 3 seconds.
<b>hS</b>	Reference ED50 service manual for parameter detail.	Support for manual mode in door closed position.			4.5	Doors shall open: <ul style="list-style-type: none"> <li>• With a manual force not to exceed 15 lb f to release a latch if equipped with a latch.</li> <li>• To set a door in motion 30 lb f.</li> <li>• To fully open the door 15 lb f.</li> <li>• Forces shall be measured 1" from latch edge of door.</li> </ul>
<b>hA</b>		Adjustment, door activation angle.				
<b>hF</b>		Power assist function.				
<b>Fo</b>	Static force in opening direction	Static force on door closing edge in opening direction.	4.5 lb f [20 N]	4.5 lb f [20 N] 15 lb f [67 N]	4.5	The force required to prevent a stopped door from opening or closing shall not exceed 15 lb f measured 1" from latch edge of the door at any point during opening or closing.
<b>Fc</b>	Static force in closing direction	Static force on door closing edge in closing direction.	4.5 lb f [20 N]	4.5 lb f [20 N] 15 lb f [67 N]	4.5	

Note 1: Speed may be slower after learning cycle completed.

**29.1.2 A156.19, Table I: Minimum opening and closing times.**

"D" door width, inches	"W" door weight, pounds				
	100	125	150	175	200
30	3.0 s	3.0 s	3.0 s	3.0 s	3.5 s
36	3.0 s	3.5 s	3.5 s	4.0 s	4.0 s

Minimum opening time to back check or 80 degrees (whichever occurs first).  
 Minimum closing time from 90 degrees to latch check or 10 degrees (whichever occurs first).

**29.1.3 A156.19, Table II: Total opening time to 90 degrees.**

Back check at 60°	Back check at 70°	Back check at 80°
Table I plus 2 s	Table I plus 1.5 s	Table I plus 1 s

If door opens more than 90°; it shall continue at the same rate as back check speed.

Back check occurring at a point between positions shall use lowest setting.

**29.1.4 Other door weights and widths**

Closing time  $T = (D \sqrt{W}) / 188$

D = Width of door in inches.

W = Weight of door in pounds.

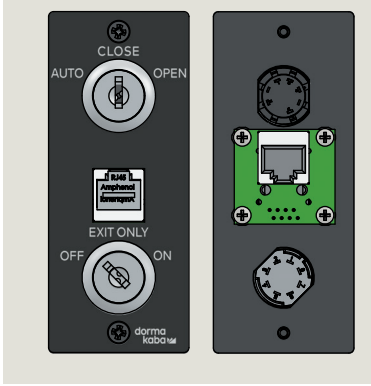
T = Closing time to latch check in seconds.

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# Appendix A - Wiring diagrams

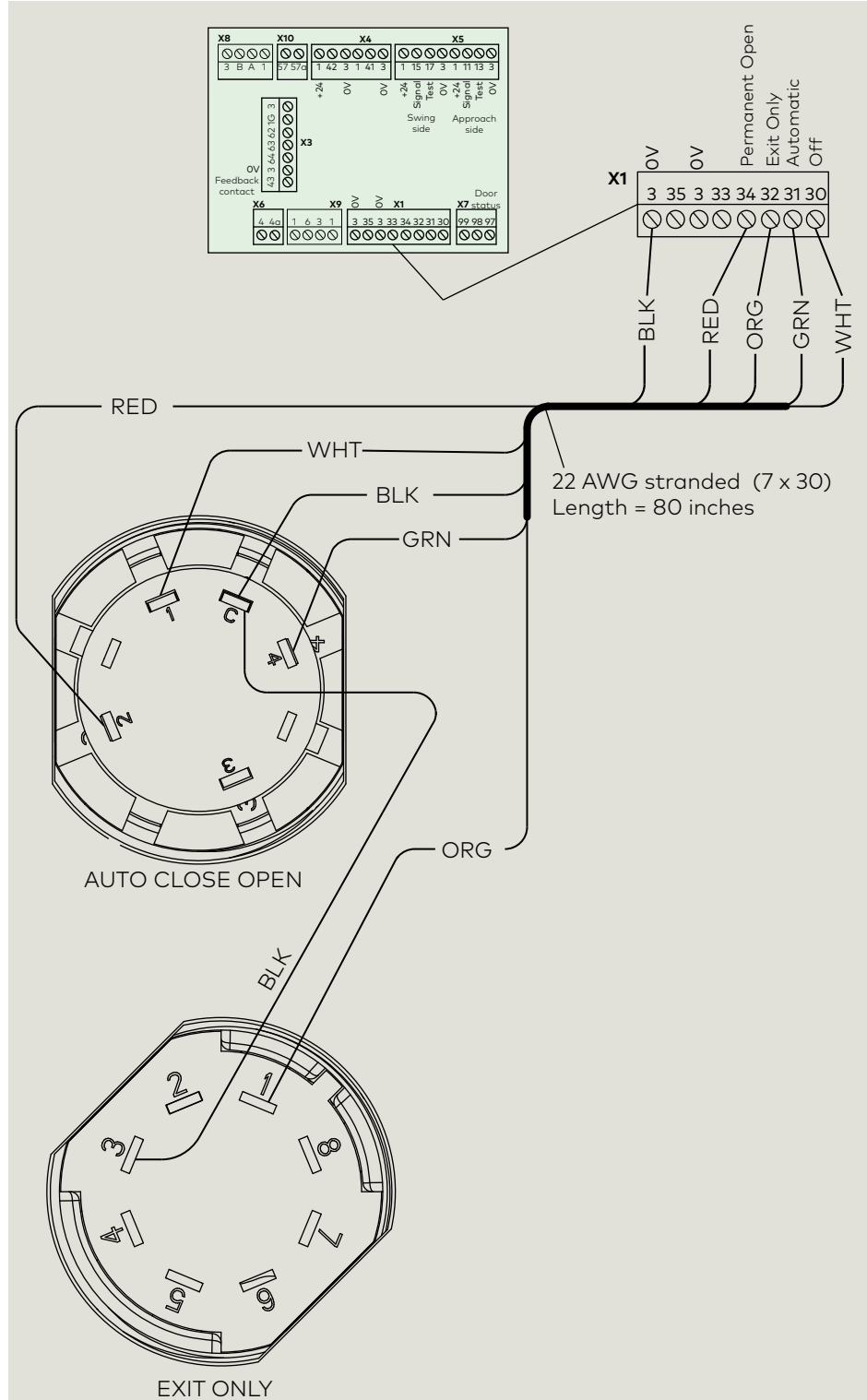
## A1.1 DX4604-21C Key Switch Panel with RJ45 connector

Fig. A1.1 Key switch panel DX4604-21C



Reference Para. 14.7 for RJ45 cable connection.

Fig. A1.2 Key switch panel wiring diagram



## A2.1 DX4604-11C Key Switch Panel

Fig. A2.1 Key switch panel DX4604-11C

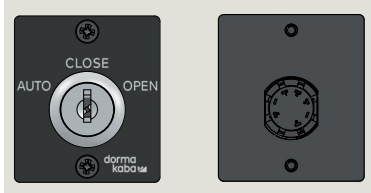


Fig. A2.2 Key switch panel wiring diagram

